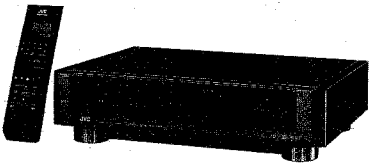
JVC

SERVICE MANUAL

Hi-Fi STEREO VIDEO CASSETTE RECORDER

HR-S9000EG



S-VHS 625 VHS PAL

HQ High Quality

D2-MAC VPT-TOP TELETEXT PROGRAMMING

SPECIFICATIONS

GENERAL

Power requirement	: 220 V~, 50/60 Hz
Power consumption	: 67 W
Temperature	: 5° C to 40°C (Operating) −20°C to 60°C (Storage)
Humidity	: 35% to 80% (Operating) 5% to 80% (Storage)
Operating position	: Horizontal only
Dimensions (WxHxD)	: 471 x 124 x 424 mm
Weight	: 9.3 kg
Tape format	: S-VHS/VHS PAL standard
Tape width	: 12.65 mm
Tape speed (SP)	: 23.39 mm/sec
(LP)	: 11.70 mm/sec
Maximum recording time (VHS)	: 480 min. with E-240 video cassette
(S-VHS)	: 360 min. with SE-180 video cassette

VIDEO

Signal system	: PAL colour and separated Y/C signals, 625 lines/50 fields (with D2-MAC decoder)
Recording system	: Rotary two-head helical scan system with slant double-azimuth combination video heads
Input	: 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output	: 1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio	: 43 dB (Rohde & Schwarz noise meter) with picture sharpness control at centre position
Horizontal resolution	: More than 400 lines (S-VHS)/250 lines (VHS SP) with picture sharpness control at centre position

AUDIO

Input	: Mic; −67 dBs, high impedance, unbalanced : AUDIO EING. connector (RCA x 2): −8 dBs, 50 k-ohms, unbalanced : A/V1 EING./AUSG. and A/V2 EING. socket (21-pin Peri connector; −3.8 dBs (CENELEC standard), 10 k-ohms, unbalanced
Output	: AUDIO AUSG. connector (RCA x 2): −8 dBs, high impedance load : A/V1 EING./AUSG. socket (21-pin Peri connector): −3.8 dBs (CENELEC standard), high impedance load, less than 1 k-ohm, unbalanced (100 k-ohms, load)

NORMAL AUDIO

Recording system	: Longitudinal track
No. of channels	: 1 (Monaural)
Frequency response	: 100 Hz to 10,000 Hz

Hi-Fi AUDIO

Recording system	: Deep-layer recording system conforming to stereo Hi-Fi VHS standard
No. of channels	: 2 (stereo)
Frequency response	: 20 Hz to 20,000 Hz
Dynamic range	: More than 90 dB
Wow and flutter	: Less than 0.005% WRMS

TUNER

Tuning system	: Frequency synthesized tuner
TV channel storage capacity	: 48 positions (+ AUX position "AU")
Channel coverage	: VHF 47 — 111 MHz 111 — 300 MHz Hyperband (APL) 300 — 470 MHz Hyperband (D2-MAC) 300 — 465 MHz UHF 470 — 862 MHz
Aerial output	: UHF channel 36 (adjustable 32 — 40)

TIMER

Clock reference	: Quartz-crystal
Programme capacity	: 1-year/8-programme timer
Memory back-up time	: Minimum 3 min.

ACCESSORIES

Provided accessories	: Aerial cable, Infrared remote control unit, "R6" battery x 2 Audio cable (RCA-RCA) S-Video cable (4-pin/4-pin) Cassette tape (SE-180)

Specifications shown are for SP mode unless otherwise specified.
E. & O.E. Design and specifications subject to change without notice.

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NOTE: For a technical description, please refer to Technical Guide VTG82051 HR-S9000EG.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒▒▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

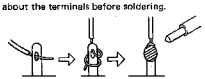

Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

Fig. 3

       (2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

Fig. 4

       (3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

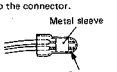

Fig. 5

       (4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

Fig. 6

       (5) Check the four points noted in Fig. 7.

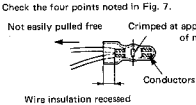

Fig. 7

PRECAUTIONS

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Handling and storage

- Avoid using the recorder under the following conditions:
  - extremely hot, cold or humid places,
  - dusty places,
  - near appliances generating strong magnetic fields,
  - places subject to vibrations, and
  - poorly ventilated places.
- Be careful of moisture condensation.
  Avoid using the recorder immediately after moving from a cold place to a warm place or soon after heating a room which was cold. The water vapour in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- Handle the recorder carefully.
  - Do not block the ventilation openings.
  - Do not place anything heavy on the recorder.
  - Do not place anything which might spill and cause trouble on the top cover of the recorder.
  - Use in horizontal (flat) position only.
- In case of transportation,
  - Avoid violent shocks to the recorder during packing and transportation.
  - Before packing, be sure to remove the cassette from the recorder.

Video cassettes

- This recorder employs S-VHS and VHS cassettes only.
  S-VHS: SE-180 for 3 hours/6 hours, SE-60 for 1 hour/2 hours and SE-30 for 30 minutes/1 hour of recording.
  VHS: E-240 for 4 hours/8 hours, E-180 for 3 hours/6 hours, E-120 for 2 hours/4 hours, E-90 for 1 hour and 30 minutes/3 hours, E-60 for 1 hour/2 hours and E-30 for 30 minutes/1 hour of recording.
- Video cassettes are equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording cannot be performed. If you wish to record on a cassette whose tab has already been removed, use adhesive tape to block the hole.

- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- Place the cassettes in cassette cases and position vertically.

Moisture condensation

- If you pour a cold liquid into a glass, water vapour in the air will condense on the surface of the glass. This is called moisture condensation.
- Moisture condensation on the head drum, one of the most crucial parts of the video recorder, will cause damage to the tape.
- Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, after heating a cold room or under extremely humid conditions.
- In conditions where moisture condensation may occur, keep the power cord plugged in an AC outlet and the power switched on; this will help prevent condensation from occurring. When condensation has occurred, it will not evaporate quickly once the power is switched on. Wait a few hours for the recorder to become dry.

Remote control unit

- Avoid violent shocks, especially take care not to drop the unit.
- Take care not to allow liquid to spill into the unit.
- Do not place heavy objects on the unit.
- Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

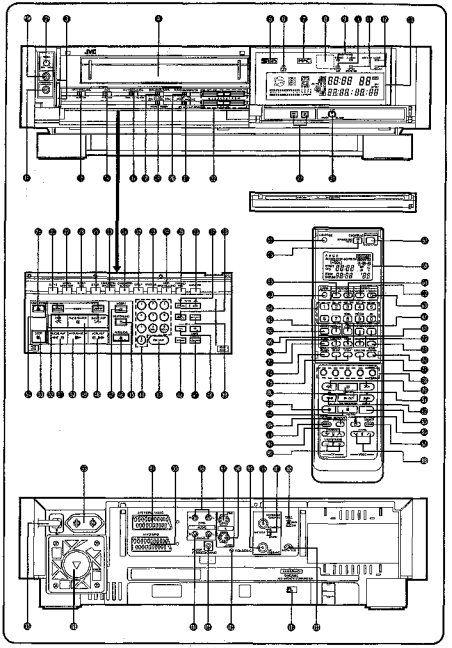
WARNING

Regarding S-VHS recordings:
Since the S-VHS Euro System is a unified standard, S-VHS recordings are the same regardless of whether the original signal is PAL or SECAM. However, this recorder operates only in the VHS mode for recording a SECAM signal.

1. S-VHS recording is not possible when the input signal is SECAM.
2. When this is attempted, the S-VHS indicator goes off and the VHS recording circuit is automatically engaged.
3. The resulting tapes have the same limitations as described in "Regarding VHS recordings".

Regarding VHS recordings:
There are two different types of SECAM colour systems: SECAM-L, used in FRANCE (also called SECAM-West), and SECAM-B, used in the GDR, e.g. (also called SECAM-East).

1. This recorder can also receive SECAM-B colour television signals for recording and playback.
2. Recordings made of SECAM-B television signals produce monochroma pictures if played back on a video recorder of SECAM-L standard, or do not produce normal colour pictures if played back on a PAL video recorder with SECAM-B system incorporated (even if the TV set is SECAM-compatible).
3. SECAM-L prerecorded cassettes or recordings made with a SECAM-L video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used for the SECAM-L standard. Use a SECAM-L recorder to record SECAM-L signals.



CONTROLS, INDICATORS AND CONNECTORS

Refer to diagrams on the front foldout page.

Front Panel

❶ Headphone jack (KOPFHÖRER)

❷ Headphone volume control (KOPFHÖRER PEGEL)
Adjusts the level of the audio output from the headphone jack.

❸ Operate button with LED indicator (BETRIEB)
Press to apply operating power to the recorder. The indicator will light. Loading a cassette also turns the power on.

❹ Cassette loading slot
Insert a VHS or S-VHS cassette. The door will close and the indicator showing that a cassette is inside will appear on the FDP (fluorescent display). With an S-VHS cassette, the S-VHS CASS. indicator ❹ will also light.

❺ S-VHS mode indicator
The "S-VHS" indicator illuminates when the S-VHS recording mode is selected with the S-VHS mode select button ❹, or when S-VHS recordings are being played back. In playback, S-VHS recordings are automatically detected and played back in the S-VHS mode.

❻ S-VHS cassette indicator (S-VHS CASS.)
Lights when a cassette marked S-VHS is inserted.

❼ D2-MAC indicator
Lights when a D2-MAC programme is being received.

❽ Infrared beam receiving window

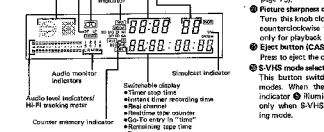
❾ Stereo and bilingual indicators
STEREO : Lights when a stereo PAL programme is being received, or the main soundtrack of a D2-MAC programme being received is stereo.
2-KANAL: Lights when a bilingual PAL programme is being received.

❿ Radio sound indicator (RADIOTON)
Lights when the received D2-MAC programme includes an independent audio programme. To listen to this programme, press the SPRACHE button on the remote control. See page 73.

⓫ Digital AV Tracking indicator (AUTOM. SPURLAGE)
Lights in the Digital AV Tracking mode. Blinks when adjusting.

⓬ Index mark/erase indicators (INDEX MARKE/LÖSCHEN)
MARKE : Blinks when an index code is being recorded.
LÖSCHEN : Lights in the Erase mode, and blinks when an index code is actually being erased.

⓭ Fluorescent display panel (FDP)



⓮ Microphone jack (MIKROFON)

⓯ AC outlet switch (NETZAUSGANG)
AUS : Power is available from the rear panel AC outlet regardless of whether the recorder is on or off.
EIN : Power is available from the rear panel AC outlet only when the recorder is on. When used in combination with the built-in timer, this enables timer-controlled power supply for the connected equipment.

⓰ EDIT switch
Normally set to AUS. For making multi-generation dubs, set it to EIN position.

⓱ Audio/Video output switch (AV1 VIDEO-AUSG.)
Selects the signal output via the 21-pin A/V1 EING./AUSG. connector ❷.
Y/C : Set to this position when delivering the S-VHS signal (Y/C separated video signal) to equipment connected to the A/V1 EING./AUSG. connector. (See page 60.)
FBAS : Set to this position when delivering the ordinary video signal to equipment connected to the A/V1 EING./AUSG. connector. (See page 59.)
AUTOM. : Delivers RGB or ordinary video signal depending on the connected equipment.

⓲ Auxiliary input select switch (EINGANGS-WAHL)
Selects the connection for external source recording.
AV1 : Set to this position when recording an input applied to the 21-pin A/V1 EING./AUSG. connector ❷.
AV2 : Set to this position when recording an input applied to the 21-pin A/V2 EING. connector ❸.
S : Set to this position when recording an input applied to the S EING. connector ❹ and AUDIO EING. connectors ❺.

⓳ Bilingual switch (PAL 2-KANAL TON)
HAUPT: To record the main soundtrack (local language).
NEBEN: To record the sub soundtrack (foreign language).
See pages 69 and 78.

⓴ Automatic level control switch (AUDIO-BEGRENZER)
Set to AUS when adjusting the hi-fi audio recording level manually.

㉑ Level indicator switch (PEGELANZEIGE)
Selects the function of the audio level indicators. See page 71.

㉒ Hi-Fi audio recording level controls (Hi-Fi AUFN.)
Use to adjust the hi-fi audio recording level, referring to the audio level indicators on the FDP. (See page 71.)

㉓ Tracking buttons (-/+) (SPURLAGE)
Press to minimise noise bars, if observed, during playback (for automatic digital AV tracking information, refer to page 79).

㉔ Picture sharpness control (BILDSCHARFE)
Turn this knob clockwise to make the picture sharper. Turn counterclockwise to give the picture a softer tone. Effective only for playback pictures. (No effect for recording.)

㉕ Eject button (CASSETTE)
Press to eject the cassette.

㉖ S-VHS mode select button
This button switches between S-VHS and VHS recording modes. When the S-VHS mode is selected, the S-VHS indicator ❺ illuminates. S-VHS recordings are possible only when S-VHS cassettes are used in the S-VHS recording mode.

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㉗ AUDIO MONITOR button
Each time this button is pressed, the audio channel to be output changes and is indicated by the L and R indicators on the FDP.

㉘ AUDIO MIX button
Press to select for listening to either the hi-fi or normal soundtracks or to a mixture of the two.

㉙ Simulcast button (SIMUL)
Press to record the video signal and normal audio signal from the built-in tuner and the hi-fi audio signal from the rear panel AUDIO EING. connectors. "SIM" will appear on the FDP. When recording FM simulcast TV programmes, use this setting.

㉚ Counter memory button (ZÄHLWERK-SPEICHER)
When this button is pressed, [3] will appear on the FDP and the tape will stop automatically at the counter reading of about "00H 00M 00S" in the Rewind or Fast Forward mode.

㉛ Counter reset button (ZÄHLWERK-RÜCKST.)
Press to reset the tape counter reading to "00H 00M 00S".

㉜ SP/LP button
Press to select the recording mode (SP or LP).

㉝ Display button (ANZEIGE)
Press to change the display from the Timer Set mode to the Clock mode. Usually use this button to switch the display to realtime, tape counter, remaining tape time (RESERVE) and date (DATUM).

㉞ Clock adjust button (UHREINSTELLUNG)
Press to adjust the clock.

㉟ Channel set/VPS button (KANAL/VPS)
A dual-function button. Serves as a VPS command enter button in timer programming (See page 86.)
Normally functions to engage the Real Channel mode (See page 64.)

㊱ Programme button (AUFZ. NR.)
Press to programme the timer.

㊲ Channel (∨/∧) (Back/Next) buttons (TV PR.) (ZURÜCK/VOR)
Press either button to scan to a desired channel. These buttons can also be used as cursor keys for 10-key programming.

㊳ Channel search button (KANAL-SUCHLAUF)
Press to initiate automatic scan tuning in the Real Channel mode. (See pages 64 and 65.)

㊴ Timer button (SCHALTUHR)
Press to engage the Timer Recording Standby mode.

㊵ Fine (–, +) buttons (FEIN)
To fine-tune in to a certain station by shifting the frequency in both directions. (See page 65.)

㊶ Cancel/Skip button (LÖSCHEN/ÜBERSPRINGEN)
A dual-purpose button. Use to clear the programmed data in the Timer Set mode or skip unnecessary channels in the Channel Set mode. (See page 85 or 65.)

㊷ Store button (SPEICHERN)
Press to store necessary channels. (See page 65.)

㊸ Go-to button (ZIELLAUF)
Press to engage the Realtime Go-To mode. (See page 80.)

㊹ Multi-purpose numeric keys

Channel selections:	See page 64.
Clock setting:	See page 62.
Timer programming:	See page 84.
Realtime Go-To and Search:	See page 80.
Index Search:	See page 79.
External source recording:	See page 86.

㊺ Audio dub button (VERTONUNG)
Press while in the Still mode, then press the WIEDERGABE/x2 button for audio dubbing. (See page 82.)

㊻ Record/Instant Timer Recording button (AUFN./DA)
Press once to start recording. Pressing it again engages the Instant Timer Recording mode. (See page 77.)

㊼ INSERT button
Press this button for insert editing. (See page 88.)

㊽ Fast Forward/Shuttle Search button (VORLAUF)
To fast forward the tape, press this button while in the Stop mode. To view the speeded-up picture in the forward direction for programme search, use this button while in the Play mode.

㊾ Pause/Still button (PAUSE/STANDB.)
Press to stop the tape temporarily to avoid recording of unwanted material or to view a still picture. The still picture can be advanced step by step.

㊿ Play/x2 button (WIEDERGABE/x2)
Press once to play back the tape; press again for double-speed playback. Also press this button to cancel the Pause/Still, Slow and Search modes.

(51) Rewind/Shuttle Search button (RÜCKLAUF)
To rewind the tape, press this button while in the Stop mode. To view the speeded-up picture in the reverse direction for programme search, use this button while in the Play mode.

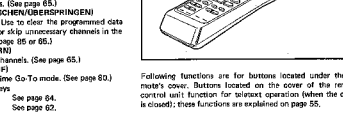
(52) Variable-speed search buttons (VARI SUCHLAUF)
Press either the "<" or ">" button to search for a specific segment of the programme at variable speeds. To cancel the variable-speed Search mode, press the WIEDERGABE/x2 button. For more details see page 76.

(53) STOP button
Press to stop the tape.

(54) Index mark/erase buttons (INDEX MARKE/LÖSCHEN)
Press MARKE during playback or recording to put an index code on the tape. (See page 79.)
Press LÖSCHEN during playback to erase an index code. (See page 79.)

Remote Control Unit (Cover Open)

Grasp the cover where the side tab is located and swing open the cover.



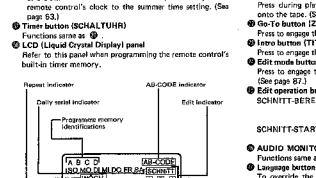
Following functions are for buttons located under the remote's cover. Buttons located on the cover of the remote control unit function for tolerant operation (when the cover is closed); these functions are explained on page 55.

(A/B) A/B code button (A/B-CODE)
When using two JVC video decks, press to switch this remote control from the "A" mode to "B" mode, or vice versa, depending on the deck to be controlled. (See pages 56 and 87.)

⑥ Transfer/Summer time adjust button (ÜBERTRAG/SOMMERZEIT EINST.)
•as an ÜBERTRAG button—press to transfer the data held in the remote control's timer memory to the recorder.
•as a SOMMERZEIT EINST. button — press to adjust the remote control's clock to the summer time setting. (See page 53.)

⑦ Timer button (SCHALTUHR)
Functions same as ❹.

❽ LCD (Liquid Crystal Display) panel
Refer to this panel when programming the remote control's built-in timer memory.



❾ Memory programme button (SPEICHER AUFZ. NR.)
Press to programme the remote control's timer memory.

❿ Clock adjust button (UHREINSTELLUNG)
Press to adjust the clock of the remote control.

⓫ Memory cancel button (SPEICHER LÖSCHEN)
Press to cancel the programmed data in the remote control's timer memory.

⓬ Video programme button (VIDEO AUFZ. NR.)
Press to engage the recorder's Timer Set mode.

⓭ Video cancel button (VIDEO LÖSCHEN)
Press to cancel the programmed data held in the recorder's timer memory.

⓮ Multi-purpose numeric keys

Clock setting:	See page 53.
Channel selection:	See page 54.
Timer Programming:	See page 85.
Realtime Go-To and Search functions:	See page 80.
Index Search:	See page 79.
External Source recording:	See page 86.

⓯ Display button (ANZEIGE)
Press to switch the display to the realtime tape counter, remaining tape time and data.
Also press to change the display from the Timer Set mode to the Clock mode.

⓰ Counter reset button (RÜCKST.)
Press to reset the Realtime Counter display to "0:00 00m 00s".

⓱ VPS/Channel button (VPS/KANAL)

⓲ Cursor (←/→) button (CURSOR)
When setting the timer, use these buttons to move the cursor to the position for data entry.

⓳ INDEX button
Press to engage the Index Search mode. (See page 79.)

⓴ Erase button (LÖSCHEN)
Press during playback to erase an index code. (See page 79.)

㉑ Mark button (MARKE)
Press during playback or recording to put an index code onto the tape. (See page 79.)

㉒ Go-To button (ZIELLAUF)
Press to engage the Realtime Go-To mode. (See page 80.)

㉓ Intro button (TITELBILD)
Press to engage the Intro Search mode. (See page 81.)

㉔ Edit mode button (SCHNITT-BETRIEB)
Press to engage the Duet Editing mode between two decks. (See page 87.)

㉕ Edit operation buttons (SCHNITT-BEREIT/START)
SCHNITT-BEREIT: To engage the player deck in the Still mode and the recorder deck in the Record-Pause mode. (See page 87.)
SCHNITT-START : To start editing between two decks. (See page 87.)

㉖ AUDIO MONITOR button
Functions same as ❷.

㉗ Language button (SPRACHE)
To override the on-screen language selection for D2-MAC programmes and select other languages manually, or select an audio-only soundtrack when the RADIOTON indicator lights. (See page 73.)

㉘ MENU/TEXT and colour-coded buttons
For on-screen menu operations and teletext page access. (See page 65.)

㉙ Variable search buttons (<<,>>)
Function same as ❸.

㉚ Pause/Still button or Mix button (II /MISCHEN)
•Use this button as a Pause/Still button in regular VCR operations.
•While in the teletext mode, use this button for TV/teletext mixed viewing.
•While receiving MAC programmes, use this button to search for subtitles. (See page 73.)

㉛ ► /X2 (Play/X2) button

㉜ ◄◄ / ►► (Rewind/Fast-Forward) (Shuttle Search) buttons

㉝ ● (Record) button
Press together with the ► (play)/X2 button ㉛ to start recording.

㉞ ■ (Stop) button
•Use this button as a Stop button in regular VCR operations.
•While in the teletext mode, use this button to stop automatic change of timed pages.

㉟ SP/LP button
Functions same as ❽.

㊱ Cassette eject button (CASSETTE)
Functions same as ❾.

㊲ Video operate button (BETRIEB VIDEO)
Press to turn the recorder power ON or OFF.
Keep this button pressed for 2 seconds when turning the power off to engage the Child Lock mode. (See page 74.)

㊳ TV programme buttons (TV PR.)
Function same as ❿.

TV Operation buttons (designated TV models only)

㊴ MONITOR (TV/VIDEO) button
Press to select the TV's operating mode.
TV: For viewing broadcast programmes or tape programmes via HF-AUSGANG connection.
VIDEO: For viewing programmes via the AV connection.

㊵ TV operate button (BETRIEB (TV))
Press to turn the TV power on or off.

㊶ TV channel buttons (KANAL)
Press to select a desired channel on the TV receiver.

㊷ TV volume button (LAUTSTÄRKE)
Press to decrease or increase the TV's sound volume.

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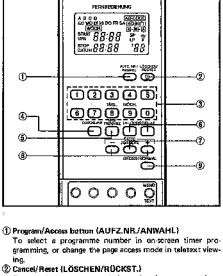
Remote Control Unit (Cover Closed)

With the cover closed, the buttons located on the cover can be used for on-screen menu and teletext operations.



① **Program/Access button (AUFZ.NR./ANWAHL)**
To select a programme number in on-screen timer programming, or change the page access mode in teletext viewing.

② **Cancel/Reset (LÖSCHEN/RÜCKST.)**
To cancel the programmed timer data in on-screen timer programming, or to instantly return to TOP's PAGE TITLE INDEX page (or page 100 with systems other than TOP) in teletext viewing.

③ **Numeric keys**
To enter data in all on-screen setting operations.

④ **Rotate button (DURCHLAUF)**
To select stored teletext pages in succession.

⑤ **VPS/Reveal button (VPS/FREIGABE)**
To switch the VPS mode on or off in on-screen timer programming, or to reveal hidden information on special teletext pages.

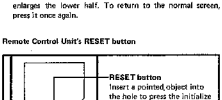
⑥ **CURSOR buttons**
To call or move the cursor on the screen in either direction.

⑦ **Timed page button (ZEIT-SEITE)**
To store subpages from automatically changing "timed" pages. (See page 92.)

⑧ **PAGE buttons (SEITE)**
To store teletext pages in single increments. (See page 93.)

⑨ **Large/Normal button (GROSS/NORMAL)**
To enlarge the on-screen information. Pressing it once enlarges the upper half of the screen; pressing again enlarges the lower half. To return to the normal screen, press it once again.

Remote Control Unit's RESET button



Rear Panel

① AC outlet
Connect the power cord of other audio or video equipment (such as an FM tuner) requiring less than 2 A of current.
Warning:
The switched AC outlet should not be used for connection of TVs and other apparatus in which uninterrupted switching could result in fire or other hazard.
This outlet is controlled by the NETZAUSGANG switch ❹. When the NETZAUSGANG switch is set to AUS, this outlet supplies (220 V~, 50/60 Hz) regardless of the BETRIEB button setting as long as the power cord of the recorder is plugged in.
When the NETZAUSGANG switch is set to EIN, this outlet supplies power only when the recorder is on.

② A/V input/output connector (A/V1 EING./AUSG.)
A 21-pin standardised (peri) audio/video input/output socket for the connection to a TV or a 2nd video recorder. The input from this socket can be recorded with the EINGANGS-WAHL switch ❹ set to AV1 in the AUX mode (engaged by pressing the numeric key "0" to obtain "AU" in the channel display). The output signal format is determined depending on the setting of the AV1 VIDEO-AUSG. switch ❹ and connected TV. (See page 60.)

③ A/V input connector (A/V2 EING.)
A 21-pin audio/video input socket for the connection to a 2nd video recorder or VideoMovie for dubbing. The input from this socket can be recorded with the EINGANGS-WAHL switch ❹ set to AV2 in the AUX mode (engaged by pressing the numeric key "0" to obtain "AU" in the channel display).

④ Audio input connection (AUDIO EING.)
Connect an audio tape recorder or other audio sources for recording sound onto the hi-fi audio track.

⑰ S input connector (S EING.)
A special S-VIDEO input connector (4-pin). To record 2nd video recorder or VideoMovie for dubbing. The input from this socket can be recorded with the EINGANGS-WAHL switch ⑱ set to S in the AUX mode (engaged by pressing the numeric key "0" to obtain "AU" in the channel display).

⑱ S output connector (S AUSG.)
A special S-VIDEO output connector (4-pin). Connect to the S-VIDEO input terminal of a 2nd S-VHS video recorder or a television equipped with the same type of terminal, using the provided S-VIDEO cable.

⑲ RF output connector (HF AUSGANG)
Connect to the aerial terminal of a TV receiver through the aerial cable (provided).

⑳ Aerial input connector (ANTENNEN EINGANG)
Connect an aerial to this connector.

㉑ Attenuator switch (ANT. SIGN.)
Set to SCHWACH to receive broadcasts from distant stations. Set to STARK to receive broadcasts of high field strength.

㉒ TEST signal switch
Set to EIN when tuning your TV receiver for the video channel. A test signal in the form of two vertical white bars will be available.

㉓ RF converter frequency adjustment screw (K40 – K32)
See page 62.

㉔ Baseband input de-emphasis switch (BASISBAND EINGANG NACHENTZERRUNG)
Used when an external satellite tuner is connected to the A/V input connector (A/V2 EING.). (See page 62.)

㉕ Vertical lock control (V-BILDFANG)
Turn this control to eliminate vertical jitters in the Still mode.

㉖ Remote pause control terminal (PAUSE FERNBEDIENUNG)
When using a JVC video camera, connect the remote control cable of the camera adaptor to this terminal for the purpose of controlling the starting and stopping of the tape with the camera's start/stop switch. When used with a JVC VideoMovie equipped with the Master Edit Control System, this terminal makes quality editing simple.

㉗ Audio output connectors (AUDIO AUSG.)
Both hi-fi and normal audio signals can be obtained from these connectors. The output can be selected with the AUDIO MONITOR button [㉙ , ㉚] and the AUDIO MIX button ㉛ .

㉘ Radiator fan
Operates when the power is switched on, to dissipate internal heat. When the D2-MAC decoder is in operation, the rotating speed of this fan increases.
Note:
Do not place anything near the heat outlet. The outlet is prone to accumulate dust. Clean it periodically.

㉙ Power cord

Remote Control Unit

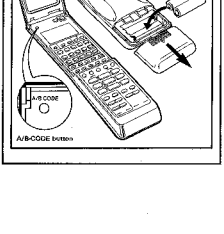
A/B code switching
When you own two JVC video decks, this remote control can operate both decks separately; they do not respond simultaneously to the remote control's signal, if they are set to respond to different codes. Initially this recorder is set in the "A" mode.
To change the mode, carefully follow the instructions below:
(1) Unplug the power cord of the recorder from the AC outlet.
(2) Press the A/B CODE select button to engage the "B" mode; "B-CODE" will appear on the LCD.
(3) Plug the power cord of the recorder into the AC outlet.
(4) Turn on the power of the recorder using the remote control's BETRIEB (VIDEO) button.
The recorder "memorizes" this B code and will respond only to the B code signals. Set the other deck to respond to the A code signals in the same procedure.

Note:
Do not operate other remote controls after you have plugged the recorder into the AC outlet and before you press the BETRIEB (VIDEO) button of this remote control.

CAUTION:
Some televisions may malfunction in response to this remote control when used in the "B" mode. If this should happen, switch the mode back to "A".

Operating distance for remote control unit
●The maximum operating distance is about 6 m.

Installing the batteries
●Insert two "R6"-size batteries (provided) into the battery compartment on the rear of the remote control unit, observing correct polarity.



A/B-CODE button

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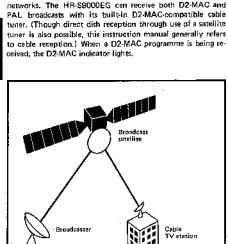
A GENERAL GUIDE TO OPERATION ACCORDING TO THE TYPE OF BROADCAST (D2-MAC AND PAL)

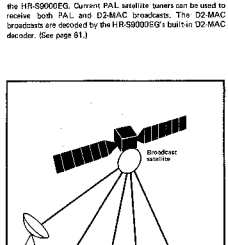
Cable Reception

In West Germany, D2-MAC FM signals are received by cable TV stations and distributed to consumers over regular cable networks. The HR-S9000EG can receive both D2-MAC and PAL broadcasts with its built-in D2-MAC-compatible cable tuner. (Though direct dish reception through use of a satellite tuner is also possible, this instruction manual generally refers to cable reception.) When a D2-MAC programme is being received, the D2-MAC indicator lights.



Direct Dish Reception

If you do not have access to a cable television network, install a dish antenna and connect an external satellite tuner to the HR-S9000EG. Current PAL satellite tuners can be used to receive both PAL and D2-MAC broadcasts. The D2-MAC broadcasts are decoded by the HR-S9000EG's built-in D2-MAC decoder. (See page 61.)



On-Screen Menu

Most initial setting operations are performed via the on-screen menu. After connection and tuner presetting, open the on-screen menu to perform necessary settings. (See page 68.)

Audio Control

Since D2-MAC is capable of offering stereo and multilingual programmes whereas PAL offers monaural, stereo, or bilingual programmes, setting the recorder's audio recording status requires different procedures.
●Use the on-screen menu for D2-MAC audio setting.
●Use the recorder's switches for PAL audio setting.

FOR A BETTER UNDERSTANDING OF S-VHS AND VHS

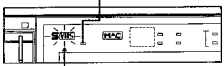
S-VHS vs. VHS

- VHS is the world's most popular video format. If you owned a VCR before this recorder, most likely it was a VHS machine.
- S-VHS is a new video sub-format based on VHS. It offers superior picture quality with a horizontal resolution of more than 400 lines by shifting the FM carrier frequency of the luminance signal from the conventional 3.8 – 4.8 MHz range to a higher one of 5.4 – 7 MHz.

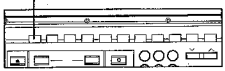
> - This recorder is equipped for recording and playback in both the S-VHS and VHS formats. Therefore, you can still play back your VHS software programmes and previously recorded family recordings.
> - You can switch to the world of S-VHS for your new recordings to enjoy breath-taking picture quality. Or to exchange recordings with someone whose VCR is not S-VHS, simply record in the VHS mode, whether with a regular VHS cassette or an S-VHS cassette.

S-VHS Recording

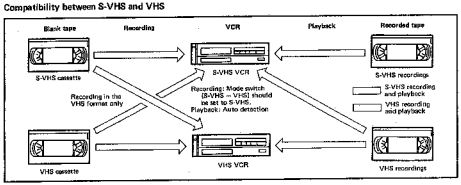
Insert an S-VHS cassette: this indicator will light.



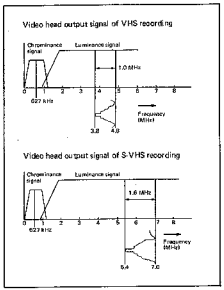
Press the S-VHS button: this indicator will light.



Compatibility between S-VHS and VHS



Recording Signal Spectrum



S-VHS Playback

Simply insert a recorded S-VHS cassette: this indicator will light.

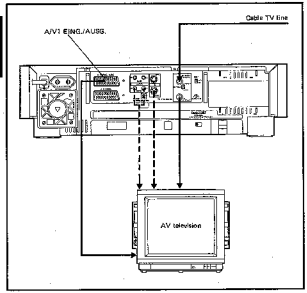
When playback starts, this indicator will light automatically.

CONNECTIONS

ENGLISH
ENGLISH

CATV Cable Connection

- First connect the cable TV line to the ANTENNEN EINGANG terminal of the recorder.



RF Connection

- Then connect the HF AUSGANG terminal of the recorder to the aerial terminal of the television using the provided aerial cable. When you are not using the recorder, the received TV signals are fed to the television via this terminal.
- If your television is equipped with the aerial terminal only, you view tape playback via this terminal. In this case, set the television to a video channel. (See page 62.)

SCART Connection

- Connect the A/V1 EING./AUSG. connector of the recorder to the 21-pin SCART connector of the television. The output signal from the A/V1 EING./AUSG. connector differs depending on the type or mode of the television, the type of source signals, and the setting of the AV1 VIDEO-AUSG. switch (⊕ of the recorder (FBAS, Y/C, or AUTOM.) See chart on next page.

4-Pin S Connection

- If your television is equipped with a 4-pin S-VIDEO IN connector, simply connect the S AUSG. connector of the recorder to the S-VIDEO IN connector of the television using the provided S-VIDEO cable. In this case, be sure to connect the AUDIO AUSG. connectors of the recorder to the AUDIO IN connectors of the television. The setting of the AV1 VIDEO-AUSG. switch of the recorder has no effect.

> **Note:**
> For switching the television's input mode, refer to the instruction manual of your television.

Output signals from the HR-S9000EG's SCART connector depending on the type of source signals

The HR-S9000EG detects through its SCART connector whether the connected television is compatible with RGB or not, and delivers the output signal to the television in two different configurations.

1. With RGB-compatible televisions

AV1 VIDEO-AUSG. switch setting / Type of source signals	FBAS	Y/C	AUTOM.
Tape playback	Composite	Y/C	Y/C
On-screen menu	Composite, and RGB	Y/C	Composite, and RGB
EE			
MAC	Composite, and RGB	Y/C	Composite, and RGB
PAL	Composite	Y/C	Y/C
Text (MAC/PAL)	Composite, and RGB	Y/C	Composite, and RGB
MAC subtitles	Composite picture with monochrome subtitle, and RGB with mixed picture and subtitle	Y/C picture with monochrome subtitle	Composite picture with monochrome subtitle, and RGB with mixed picture and subtitle
PAL subtitles	Composite picture and RGB subtitle (must be mixed on TV)	Y/C picture with monochrome subtitle	Composite picture and RGB subtitle (must be mixed on TV)

Note:
If the television is an auto-RGB type, the underlined signal form appears on the TV screen. Otherwise, either output can be selected by setting the television's mode manually.

2. With non-RGB-compatible televisions

AV1 VIDEO-AUSG. switch setting / Type of source signals	FBAS	Y/C	AUTOM.
Tape playback	Composite	Y/C	Y/C
On-screen menu	Composite, and RGB	Y/C	Y/C
EE			
MAC	Composite, and RGB	Y/C	Y/C
PAL	Composite	Y/C	Y/C
Text (MAC/PAL)	Composite, and RGB	Y/C	Y/C
MAC subtitles	Composite picture with monochrome subtitle, and RGB with mixed picture and subtitle	Y/C picture with monochrome subtitle	Y/C picture with monochrome subtitle
PAL subtitles	Composite picture with monochrome subtitle, and RGB	Y/C picture with monochrome subtitle	Y/C picture with monochrome subtitle

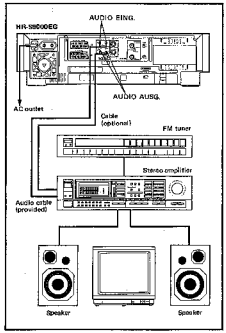
Note: Underlined signal form appears on the TV screen.

Audio connection

For more dynamic sound reproduction, a stereo system can be connected. By doing so, even with monaural televisions, you can play stereo and bilingual programmes. When listening to sound from the connected stereo system, turn down completely the sound volume of the television.

Connect the AUDIO EING. L and R connectors of the recorder to the recording output terminals of the amplifier, and connect the AUDIO AUSG. L and R connectors of the recorder to the AUX IN or TAPE MONITOR terminals of the amplifier.

If you want to timer-control the recording of FM simulcast programmes, connect the tuner's power cord to the recorder's AC outlet. Set the NETZAUSGANG switch ⓑ to EIN, and both the tuner and the recorder will be switched on at the recorder's preprogrammed time. Timer-controlled recording of FM simulcast programmes is not possible with the type of tuners which reset the channel each time the power is switched off.



CAUTION

- This recorder has a dynamic range of more then 90 dB with regards to its hi-fi audio capability. It is recommended that you check the maximum level if you are going to listen to the hi-fi audio signals through a stereo amplifier. A sudden surge in speaker input may cause speaker damage.
- Some speakers and televisions are specially shielded to prevent television interference. If both are of the non-shielded type, do not place the speakers adjacent to the TV set, otherwise the video playback picture will not be normal because of mutual interference.

Direct Dish Reception

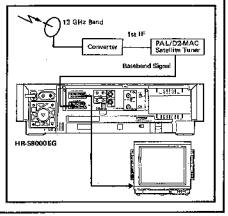
Current satellite tuners designed for PAL satellite broadcast reception can be connected to either SCART connector for reception of both PAL and D2-MAC broadcasts. (Use of the AV2 EING. connector is recommended.) As PAL and D2-MAC signals are subject to a different pre-emphasis, set the BASISBAND NACHENTZERRUNG switch ⓐ to either EIN or AUS for proper reception of either PAL or D2-MAC broadcasts.

With a PAL satellite tuner

	PAL	D2-MAC
Tuner's de-emphasis switch (ON/OFF)	ON	OFF
HR-S9000EG's NACH-ENTZERRUNG switch	Either	EIN

With a PAL/D2-MAC satellite tuner

	PAL	D2-MAC	
Tuner's de-emphasis switch (PAL/D2-MAC/OFF)	PAL	D2-MAC	OFF
HR-S9000EG's NACH-ENTZERRUNG switch	Either	AUS	EIN



VIDEO CHANNEL SETTING

When using an AV television with SCART or 4-pin S connection (see page 59), video channel setting is not necessary.

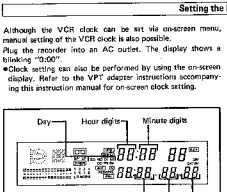
1. Press the BETRIEB button ❶ to turn the power on. Turn on the TV receiver.
2. Set the TEST switch ❷ to EIN.
3. Adjust your TV receiver in the vicinity of UHF channel 36 until you bring in the two white signal bars on the screen as illustrated. This is your VIDEO CHANNEL.
4. Reset the TEST switch to AUS.

Notes:
- If some interference noise is seen on the screen because of broadcasts on neighbouring channels or if your preset broadcasts should be affected in picture quality, it is necessary to shift the RF converter output frequency from that of channel 36. Consult your JVC dealer for making this adjustment.
- Video channel setting is also possible using a prerecorded VHS video cassette. Play back the tape and tune the TV receiver to obtain clear pictures and sound while monitoring the playback picture on the TV screen.
- If your TV receiver is not provided with an AFC circuit, perform fine tuning of the TV receiver when you are actually viewing video programs.
- When using this video channel, normally set "2. MAC-RGB OUT" on the 02-MAC FUNCTIONS menu to "NO". (See page 68.)

CLOCK SETTING

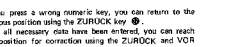
Setting the built-in clock

Although the VCR clock can be set via on-screen menu, manual setting of the VCR clock is also possible.
Plug the recorder into an AC outlet. The display shows a blinking "0:00".
- Clock setting can also be performed by using the on-screen display. Refer to the VPT adapter instructions accompanying this instruction manual for on-screen clock setting.



Power failure indicator
The blinking "0:00" (initial condition of the display) is also a power failure indicator, showing that there has been a power failure in excess of 3 minutes. Re-adjusting the time restores the normal condition of the clock display.

1. Press UHREINSTELLUNG ❶.
   - The display will change to the Clock Set mode with the hour digits blinking and ready for entry.
2. Set the hour and minute in that order.
   - To set a one-digit number, first press "0", then press the numeric key for 1 to 9.
   - Zero will not be displayed in the tens place of the hour indication unless the cursor is moved back to the hour digits.
   - For a two-digit number, simply press the corresponding numeric keys in the right order.
   - In hour setting, numbers larger than 23 will be rejected.
   - In minute setting, numbers larger than 59 will be rejected.
3. Set the day and month in that order.
   - The setting method is the same as for time setting.
   - In day setting, invalid numbers such as 32 of January or 30 of February will be rejected.
   - 29 of February will be accepted only during leap years.
   - In month setting, numbers larger than 12 will be rejected.
4. Set the year.
   - Key in only the last two digits of the year.
5. Press UHREINSTELLUNG.
   - Press it at the exact instant of the time signal, and the clock will be set accurately to the present time.
   - The day-of-the-week indication will be displayed automatically.

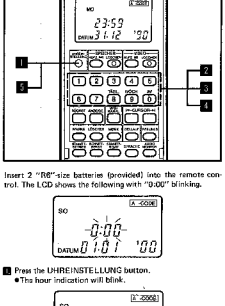


Notes:
- If you press a wrong numeric key, you can return to the previous position using the ZURÜCK key ❷.
- Once all necessary data have been entered, you can reach any position for correction using the ZURÜCK and VOR keys.
- Clock setting is not possible during playback, or if the SCHALTUHR button ❸ is engaged with the TIMER indicator lit. First check to see that the TIMER indicator is off.

ENGLISH-ENGLISH

Setting the LCD clock of the remote control unit

The LCD clock is independent of the recorder's clock.

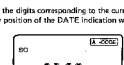


Insert 2 "R6"-size batteries (provided) into the remote control. The LCD shows the following with "0:00" blinking.

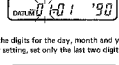
1. Press the UHREINSTELLUNG button.
   - The hour indication will blink.

2. Press the numeric keys corresponding to the current hour, then the minute indication will blink.
   - Always key in two digits.
   For a one-digit number, key in "0" first.

3. Key in the digits corresponding to the current minute, then the day position of the DATE indication will blink.



4. Key in the digits for the day, month and year in succession.
   - In year setting, set only the last two digits of the year.



5. Press the UHREINSTELLUNG button at the exact instant of the time signal.
   - The clock of the remote control will be set accurately to the second.
   - The day-of-the-week indication will be displayed automatically.
   - To readjust the clock, press the UHREINSTELLUNG button and then press either CURSOR ← / → button so that the position which requires correction blinks.

SUMMER TIME ADJUST
For quickly making the annual clock adjustment to the "summer time" (daylight saving time) setting, and back to regular time later, use the SOMMERZEIT EINST. button ❹.
1. Simply press and quickly release the SOMMERZEIT EINST. button in the Clock mode to set the clock forward by one hour.
2. Later in the year, to switch back to regular time, simply hold the SOMMERZEIT EINST. button pressed for more than 2 seconds to set the clock back by an hour.

Note:
- For summer time adjustment, make sure that the transfer-ready mark is not on the LCD.

OPERATING THE BUILT-IN TUNER

This recorder incorporates an advanced frequency synthesized D2-MAC-compatible tuner which is pretuned to 125 channels to cover VHF, UHF and CATV broadcasts. Channel indication is given in two different ways: real channel numbers and channel position numbers. Real channel number indication is available by pressing the KANAL/VPS button ⑩ or VPS/KANAL button ⑥, during search by pressing the KANAL-SUCHLAUF button ⑥, while channel position number indication is always available in the channel display.

Correspondence between 126 pretuned TV stations and the recorder's real channel indications

DISPLAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
Ch	–	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11 (H1)	E12 (H2)	A	B	C	D	E	F	G	H
CC	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10
	89	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
DISPLAY	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ch	E21	E22	E23	E24	E25	E26	E27	E28	E29	E30	E31	E32	E33	E34	E35	E36	E37	E38	E39	E40
CC	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40
Cd	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34						
DISPLAY	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ch	E41	E42	E43	E44	E45	E46	E47	E48	E49	E50	E51	E52	E53	E54	E55	E56	E57	E58	E59	E60
CC	S41	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
DISPLAY	61	62	63	64	65	66	67	68	69		75	76	77	78	79					
Ch	E61	E62	E63	E64	E65	E66	E67	E68	E69		–	–	–							
CC	–	–	–	–	–	–	–	–	–		X	Y	Z	–	–					

Stored channels
A total of 126 channels are receivable. Of them, up to 48 can be stored for easy channel selection. Prior to shipment, some channels are stored.
It is possible to store more channels or skip some channels if there are no broadcasts on those channels in your area. It is possible to change the stored channels to correspond to your preferred channel allocation. Skipped channels can be restored whenever necessary.
●Channel memories are permanent; the programmed channel allocation will not be erased even if the recorder is unplugged from the AC outlet.

Channel selection
To select a channel for recording, normally use the TV PR. buttons ⑨ (⑥ on the remote control) or 10 numeric keys ⑥ (⑥). You can choose any channel from among the stored ones by calling up the corresponding channel position number.
●Use the TV PR. "∨" button to scan to a channel in the direction of decreasing numbers; the TV PR. "∧" button, in the direction of increasing numbers.
●When using the 10 numeric keys, pay attention to the following. To set a one-digit number, first key in 0. To key in a two-digit number, enter numbers in sequence. The number entered first will be shifted to the tens place. An invalid number (larger than 48) will be rejected.

If you want to select a channel other than those stored, engage the Real Channel mode and call up a channel, while referring to the real channel number display.
With recorder's controls:
●Press the KANAL/VPS button ⑩ to engage the Real Channel mode and call up a channel by using the 10 numeric keys. Or simply press the KANAL-SUCHLAUF button ⑥ .

With remote control:
●Press the VPS/KANAL button ⑥ to engage the Real Channel mode and call up a channel by using the 10 numeric keys. For details refer to the next page.

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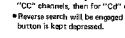
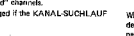
Storing channels

Turn the TV receiver to ON and adjust it to your video channel.

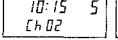
A. Automatic setting
1 Turn the recorder's power on.
●The display will change from the Date mode to the Counter mode.
2 Press the KANAL-SUCHLAUF button ⑥ .
●The display will change to the Real Channel mode and automatic scanning will take place for "Ch" channels, "CC" channels, then for "Cd" channels.
●Reverse search will be engaged if the KANAL-SUCHLAUF button is kept depressed.



VHF channel 2 is stored for channel position 5.

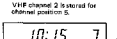


Cable channel 75 is stored for channel position 6.



D2-MAC cable channel 21 is stored for channel position 7.

●When a broadcast is detected, scanning stops automatically and the displayed channel position number will blink.

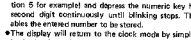


"Colon" will appear to indicate that this real channel is not stored for the indicated channel position.

3 Select a channel position into which you wish to store that station by using the numeric keys ⑥ or the TV PR. buttons ⑨ while the channel position number is blinking.
4 After confirming the real channel number and channel position number, press the SPEICHERN button ⑥ until the channel position number stops blinking.
●"Colon" will disappear and the selected station has been stored.

B. Manual Setting from remote control unit
(1) Press the VPS/KANAL button ⑥ .
●The display will change to the Real Channel mode.
(2) Press the VPS/KANAL button until the real channel number starts blinking.
●Pressing the VPS/KANAL button will change the Real channel mode among "Ch", "CC", and "Cd".
●Blinking will stop in 10 seconds.
(3) Enter the number of a real channel to be preset.
●The channel position number will start blinking.
(4) Select a channel position into which the selected real channel is to be stored, using the 10-digit keypad.
●Always key in a two-digit number ("09" for channel position 5 for example) and depress the numeric key for the second digit continuously until blinking stops. This enables the entered number to be stored.
●The display will return to the clock mode by simply keying in the channel number to be viewed.

●Fine Tuning
For fine tuning, use the FEIN "+" or "–" button ⑥ in step 3 (both in automatic and manual setting) "+" to fine-tune in the direction of increasing frequencies, and "–" to fine-tune in the direction of decreasing frequencies.



Upper or lower "–" sign indicates the operating tuning frequency is above or below the standard broadcast frequency.
Centre "–" sign will appear when it corresponds to the standard.

When a D2-MAC broadcast is detected, a bit-error meter appears on the screen. The numeral on the right shows a bit error (from 255 to 1) and the scale gives a rough reference. Adjust with the FEIN buttons to minimise the error. When the errors is 0, the numeral will change to "OK".

Note:
●This bit-error meter can also be used as a reference when tuning an external satellite tuner connected to the SCART connector. For this purpose, press the KANAL/VPS button in the AUX mode. Then, the bit-error meter will appear on the screen when D2-MAC signals are received.

Skipping the stored channels
1. Call up the channel position number that you wish to skip by using the TV PR. buttons or 10 numeric keys.
2. Press the KANAL/VPS button.
3. Press the UBERSPRINGEN button ⑥ .
●"Colon" will appear to indicate that the displayed real channel is not stored.
●The skipped channel position number will not appear on the channel display during up/down scan tuning.

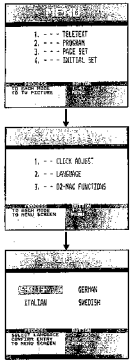
Note:
If no command is given after each step of the setting operation, the Real Channel mode will be automatically cancelled in 10 seconds.

ON-SCREEN MENU SYSTEM

The on-screen menu system facilitates initial VCR status setting and use of the built-in teletext decoder. For teletext operations, see page 88.

Initial VCR status setting includes clock setting, on-screen language selection and functions associated with D2-MAC. Since on-screen messages help you operate all other on-screen menu functions, we recommend that you set the language first.

On-Screen Message Language Setting



- Turn the recorder and television on, and set both units as required.

1 Press the MENU/TEXT button.
- The menu (in one of the four languages, depending on the preset status) will appear on the screen.

2 Press numeric key "4".
- The INITIAL menu will appear.

3 Press numeric key "2".
- The ON SCREEN LANG. menu will appear.

4 Move the cursor to a desired language with either CURSOR button.

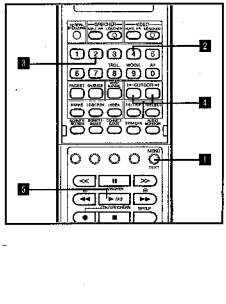
5 Press the OK/SPEICHERN button.
- The screen will change to the corresponding display in the selected language.
- Now follow the on-screen messages for all other on-screen operations.

Clock Setting

If you have not yet set the built-in clock, set it on the screen. If the VCR tuner is set to a channel broadcasting teletext programmes accompanied by time information, the clock data can be set automatically by reading time information.

■ Open the INITIAL menu, and select "1. CLOCK ADJUST."

■ Press the AUFZ.NR./ANWAHL button.
- "SEARCH" will appear in place of the time data while the time information is being searched.
- It may take some time to complete time setting. This is not due to any defect of the unit.
- The date and year cannot be set automatically. Enter the data manually with 10-key input.
- All data can also be set manually. For this purpose, use the numeric keys, CURSOR keys, and at the end of adjustment, press the OK/SPEICHERN button.



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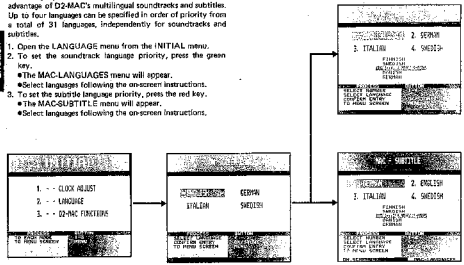
D2-MAC Language Selection

If you have stored some D2-MAC channels, proceed to D2-MAC language setting. The HR-S9000EG is able to take full advantage of D2-MAC's multilingual soundtracks and subtitles. Up to four languages can be specified in order of priority from a total of 31 languages, independently for soundtracks and subtitles.

1. Open the LANGUAGE menu from the INITIAL menu.
2. To set the soundtrack language priority, press the green key.
   - The MAC-LANGUAGES menu will appear.
   - Select languages following the on-screen instructions.
3. To set the subtitle language priority, press the red key.
   - The MAC-SUBTITLE menu will appear.
   - Select languages following the on-screen instructions.



Guide to on-screen messages and operation

Numerals in the BUTTON column: numeric keys

←——→ : indicates CURSOR keys

- The languages are divided in two groups. When you cannot find your intended language in one group, select (+OTHER LANG.+), then another group of languages will be displayed. The SPRACHE button on the remote control unit can also be used for language selection.
- The three menus (ON SCREEN LANG., MAC-LANGUAGES and MAC-SUBTITLE) are accessible among one another by pressing the colour key corresponding to the column colour at the bottom of the screen.

Available languages:

11 major languages	
Danish	Dutch
German	Norwegian
English	Portuguese
Spanish	Finnish
French	Swedish
Italian	(Others)

20 other languages	
Irish	Galician
Luxemburgn	Icelandic
Turkish	Hungarian
Flemish	Polish
Korean	Romanian
Japanese	Romansh
Greek	Russian
Chinese	Hindi
Arabic	Bulgarian
Czech	(Others)
Basque	

D2-MAC Function Setting

To receive D2-MAC broadcasts properly and deliver them to your television properly, the following settings are essential.

1. Open the D2-MAC FUNCTIONS menu from the INITIAL menu.
2. Follow on-screen instructions for operation.

Guide to operation

●1. SATELLITE TUNER

This setting has no effect if you receive D2-MAC broadcasts via cable transmission. If you use a satellite tuner not equipped with a D2-MAC decoder, set to YES in order for the HR-S9000EG's D2-MAC decoder to turn on when in the AUX mode. (To receive D2-MAC broadcasts via the 21-pin SCART connector, the AUX mode must be used in which the built-in D2-MAC decoder is automatically switched off. Setting this item to YES turns it on again.) If your satellite tuner incorporates a D2-MAC decoder and Y/C separate output terminal, be sure to set this item to NO. If the tuner's output is not a Y/C separate signal, set this item to "YES" to use the HR-S9000EG's D2-MAC decoder.

●2. MAC-RGB OUT

D2-MAC broadcasts include an RGB control signal which engages the connected television in the RGB mode automatically. This setting is provided to prevent the RGB control signal from being output to the television. If it is set to YES, it is not possible to view another channel via RF while recording a D2-MAC programme. Usually set this item to NO to avoid this inconvenience.

●3. 16:9 FORMAT

Set to YES if your television is compatible with wide-aspect programmes (16 : 9 aspect ratio as opposed to the standard 4 : 3 aspect ratio). If your television is not compatible with such programmes, the images will appear vertically elongated regardless of the setting of this item.

●Items 4 and 5 aid in the selection of audio recording options for D2-MAC broadcasts. See page 69 through 73, "INFORMATION ON THE HR-S9000EG's AUDIO SYSTEM".

INFORMATION ON THE HR-S9000EG'S AUDIO SYSTEM

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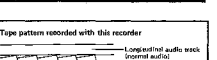
Hi-Fi and Normal Audio

To provide true hi-fi audio accompaniment to video entertainment and, at the same time, compatibility with monaural VHS tapes, this recorder records hi-fi audio signals (2-channel) deep into the tape's magnetic coating (with video signals on top of them), and normal audio signals (monaural) onto the usual longitudinal audio track. This 3-channel capacity permits selective recording of audio soundtracks of television programmes.

CAUTION

The hi-fi soundtrack recorded with Hi-Fi VHS decks cannot be reproduced with non-Hi-Fi VHS decks.

Tape pattern recorded with this recorder



Hi-Fi audio recording and reproduction are available only from the hi-fi audio track while the longitudinal audio track provides normal audio.

The hi-fi and normal soundtracks are recorded simultaneously, and audio dubbing is applicable only to the normal audio.

Recorded signals by track according to the selected input mode

Input mode \ Track	Video track	Normal audio track (mono)	Hi-fi audio track (2-channel)
TUNER (SIMUL button pressed to OFF)	TV picture (from built-in tuner)	TV sound (from built-in tuner)	TV sound (from built-in tuner)
SIMULCAST (SIMUL button pressed to ON)	TV picture (from built-in tuner)	TV sound (from built-in tuner)	Audio signal from AUDIO EING. (Mixing with microphone input is possible.)
AUX (AU Channel display section)	Video signal from A/V1 EING./AUSG. or A/V2 EING. or S EING.	Audio signal from A/V1 EING./AUSG. or A/V2 EING., or AUDIO EING. with EINGANGS-WAHL switch set to "S". (Mixing with microphone input is possible.)	

Notes:

●To engage the AUX mode, press the "0" key of the 10-digit keypad.

●Microphone input will be mixed with the audio signals on the hi-fi audio track. Therefore, do not leave a microphone connected to the MIKROFON jack unless needed.

●You can record audio only (without recording any video signal) on the hi-fi audio track. This means you can record a continuous 8-hour FM programme onto a single cassette (E-240). For this purpose, press the SIMUL button so SIM lights on the FDP and connect an audio source, such as an FM tuner, to the AUDIO EING. connectors ●. And tune the built-in tuner to a vacant channel.

Audio Configuration of PAL Broadcasts

PAL offers three types of broadcasts in terms of audio configuration.

1. Monaural
2. Stereo
3. Bilingual (main and sub)

When a stereo programme is received, the STEREO indicator lights, and when a bilingual programme is received, the 2-KANAL indicator lights. With bilingual programmes, the soundtrack to be recorded on the normal audio track can be selected with the PAL 2-KANAL TON switch.

Recorded options according to the type of broadcasts and the setting of the PAL 2-KANAL TON switch

Type of broadcast \ PAL 2-KANAL TON switch position \ Audio Track		Normal audio track (mono)	Hi-fi audio track (2-channel)	
			L	R
Regular (monaural audio)	Either position	Mono	Mono	Mono
Stereo broadcast	Either position	L + R mixed	Stereo	
Bilingual broadcast	HAUPT	Main soundtrack (local language)	Main soundtrack (local language)	Sub soundtrack (foreign language)
	NEBEN	Sub soundtrack (foreign language)		

Audio Configuration of D2-MAC Broadcasts

D2-MAC offers a variety of audio programming using up to 8 sound channels. One TV programme can include, in addition to its main soundtrack (either stereo or monaural), several additional soundtracks. These additional soundtracks can be different language versions of the main programme, or audio programmes independent of the picture programming. Possible configurations are:

1. Monaural
2. Stereo
3. Monaural main soundtrack + language versions or independent audio programmes
4. Stereo main soundtrack + language versions or independent audio programmes

When the received D2-MAC programme includes a stereo soundtrack, the STEREO indicator lights. If it includes an independent audio programme, the RADIOTON indicator lights. For programmes such as 3 and 4, the number of language versions to be recorded and the mix level relative to the main soundtrack can be specified using the on-screen menu.

Recording options according to the sound recording mode

REC SOUND SELECT / Audio track / MAC Configuration	1 language			2 languages			3 languages		
	L	R	Norm	L	R	Norm	L	R	Norm
1	Z	Z	Z	Z	Z	Z	Z	Z	Z
2	ZL	ZR	ZL+ZR	ZL	ZR	ZL+ZR	ZL	ZR	ZL+ZR
3	Z+A	Z+A	Z+A	Z+A	Z+A	Z+B	Z+A	Z+B	Z+C
4	Z+B	Z+B	Z+B	Z+B	Z+B	Z+C	Z+B	Z+B	Z+C

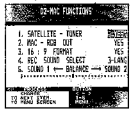
Note:
Designation of additional languages as A, B, and C does not necessarily mean that only three additional languages are broadcast, but indicate languages that are specified in order of priority on the on-screen menu. (See page 67.)

On-screen sound recording selection and mix level control

1. Open the D2-MAC FUNCTIONS menu from the INITIAL menu. (See page 68.)
2. Select "4. REC SOUND SELECT".
3. Press either CURSOR key to obtain "1-LANG.", "2-LANG." or "3-LANG." depending on how you wish to record soundtracks, referring to the chart "Recording options according to the sound recording mode".
4. Select "5. SOUND 1 ← BALANCE → SOUND 2".
5. Move the cursor to the right to reduce the main soundtrack level to make additional languages louder.
   - This adjustment is possible only when the broadcast programme includes SR data which permits relative level control.

Possible audio configurations

Signals \ Configuration	1	2	3	4
Original sound Z (monaural)	○		○	
Original sound Z (stereo ZL/ZR)		○		○
Additional language A			○	
Additional language B			○	○
Additional language C			○	○



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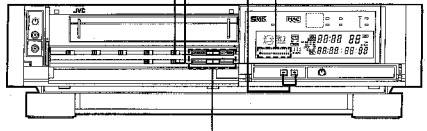
Hi-Fi audio recording level adjustment

While recording onto the normal audio track is controlled by the built-in Automatic Level Control circuit, hi-fi audio recording has two control options: manual and automatic.

AUDIO-BEGRENZER switch
Setting this switch to EIN activates the built-in audio limiter circuit for both channels so that the recording level is automatically controlled. For manual adjustment, set this switch to AUS. (The recording level for normal audio is always controlled automatically regardless of the setting of this switch.)

PEGELANZEIGE switch and SPURLAGE buttons
The right-channel audio level indicator also functions as a tracking meter during playback. If noise or breaks are sensed in the reproduced sound from the hi-fi audio track or noise bars are visible on the screen, perform manual tracking adjustment by using the SPURLAGE buttons to correct it (see page 75) while referring to the meter. For this purpose, set this switch to Hi-FI SPURLAGE and press the buttons so that the greatest number of elements of the right-channel indicator light. When this switch is set to AUS, the indicators do not light, regardless of whether during recording or playback.
Note:
When playing back a tape with no recording on the hi-fi audio track, the level indicator does not light when the PEGELANZEIGE switch is set to Hi-FI SPURLAGE.

Audio level indicators
For manual control of the recording level, first set the relevant switches as follows:
AUDIO-BEGRENZER ⓑ → AUS
PEGELANZEIGE ⓒ → EIN
AUDIO MONITOR ⓓ → L and R (Hi-Fi Stereo)
Then slide the Hi-FI AUFN. controls referring to these indicators. When indicators up to or near 0 dB light for the loudest signal being applied, the recording level is optimum. (The level at which only one red indicator lights from time to time may be most appropriate.)
During playback, these indicators show the level of audio signals recorded on the tape.
These indicators do not light when the PEGELANZEIGE switch is in the AUS position.
Notes:
- With the AUDIO MONITOR and AUDIO MIX buttons pressed so either L, R or NORM lights on the FDP, the recording level of hi-fi audio signals cannot be correctly indicated. Select the L and R indication when adjusting the recording level.
- The normal audio signal level is also displayed by these indicators, but cannot be adjusted.

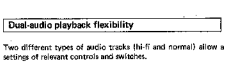


Hi-Fi AUFN. controls
Slide these controls, the upper for left channel and the lower for right channel, for manual adjustment of the hi-fi audio recording level.

Note:
When a microphone is connected to the MIKROFON jack, set the AUDIO-BEGRENZER switch to the EIN position to protect against over-level input signals from the microphone.

Dual-audio playback flexibility

Two different types of audio tracks (hi-fi and normal) allow a variety of playback options depending on the connection and the settings of relevant controls and switches.

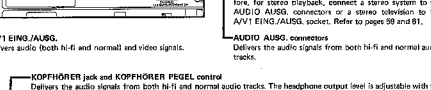


A/V1 EING./AUSG.
Delivers audio (both hi-fi and normal) and video signals.

HF AUSGANG connector
Delivers audio (both hi-fi and normal) and video signals to a TV receiver. When the recorder is not used, the aerial signal is supplied from this connector to the TV receiver to allow regular TV viewing; when a video tape is played back through the HF AUSGANG connector, the audio is reproduced always as monaural; with hi-fi stereo tapes, both channels are mixed or the one selected by the AUDIO MONITOR and AUDIO MIX button is reproduced. Therefore, for stereo playback, connect a stereo system to the AUDIO AUSG. connectors or a stereo television to the A/V1 EING./AUSG. socket. Refer to pages 59 and 61.

AUDIO AUSG. connectors
Delivers the audio signals from both hi-fi and normal audio tracks.

KOPFHÖRER jack and KOPFHÖRER PEGEL control
Delivers the audio signals from both hi-fi and normal audio tracks. The headphone output level is adjustable with the KOPFHÖRER PEGEL control.



Audio monitor indicators (L, R, NORM)

AUDIO MONITOR button
Selects the hi-fi audio channel (left, right or both) for listening. Use this button together with the AUDIO MIX button referring to the three LED indicators (L, R and NORM) on the FDP.

- When the power is turned on, the L and R indicators light and both hi-fi stereo soundtracks can be listened to. Press this button and only the L indicator lights to listen to only the left hi-fi channel sound.
- Press this button again and only the R indicator lights to listen to only the right hi-fi channel sound.

Notes:

- This button functions during recording as well, although it has no effect on the recorded signal.
- With the AUDIO MIX button pressed for the NORM setting, pressing the AUDIO MONITOR button has no effect.

AUDIO MIX button
Operates in conjunction with the AUDIO MONITOR button to select sound tracks for listening.

- When the power is turned on, both hi-fi stereo soundtracks can be listened to. Press this button once to listen to only the normal soundtrack (the NORM indicator lights).
- Press this button again to listen to a mixture of hi-fi stereo (L and/or R) and normal soundtracks, by selecting the combination with the AUDIO MONITOR button.

Notes:

- This button functions during recording as well, although it has no effect on the recorded signal.
- When playing back a tape containing the same soundtrack on both hi-fi and normal audio tracks, a slight time lag is sensed between the two soundtracks, probably with some distortion when listening in the Mix mode.

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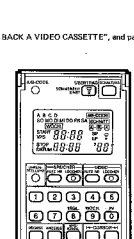
RECORDING OF D2-MAC PROGRAMMES

(If you are not familiar with basic VCR operations, also refer to page 75, "PLAYING BACK A VIDEO CASSETTE", and page 77, "BASIC OPERATION FOR RECORDING TV PROGRAMMES.")

Audio Recording

- Specify the language priority. (See page 67.)
- Specify the sound recording mode. (See page 70.)
- Specified priority can be overridden manually at any time (while maintaining the preset priority).

- To override the preset priority and record any other language, press the remote control's SPRACHE button. The newly selected language will be recorded.
- If you are recording and watching the same programme, you can check the soundtracks (languages) that are being recorded by using the AUDIO MONITOR and AUDIO MIX buttons. (See page 72.)
- Selective monitoring of the soundtracks during recording does not have any effect on the recorded signals.
- If the RADIOTON indicator lights to show that the programme includes an independent audio programme, you can record it in place of language versions. For this purpose, press the SPRACHE button until this audio programme is selected.



Subtitle Viewing and Recording

- Some D2-MAC programmes will be accompanied by subtitles. To view and record subtitles, press the remote control's MISCHEN button. "PLEASE WAIT" will appear on the screen until the subtitle in a language with the highest specified priority is displayed.

Wide-Aspect Programmes

- Some D2-MAC programmes will be transmitted in the wide-aspect format.
- If your television is not compatible with the wide-aspect format, images will be vertically elongated.
- If your television is compatible with the wide-aspect format, those programmes will be viewed in the wide-aspect mode if "16:9 FORMAT" is set to "YES" on the on-screen menu. (See page 68.) With televisions whose aspect ratio is manually switchable, it is not necessary to set this item to "YES". Simply switch the television to the "wide aspect" (16:9) position.
- However, the images recorded on the tape are vertically elongated.

- To play back such recordings with a wide-aspect-compatible television, press the remote control's SPRACHE button during playback. Vertically elongated images will be corrected.

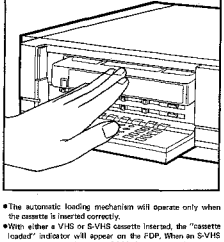
Recording One Programme While Watching Another

- Unless your television incorporates a D2-MAC tuner/decoder, it is not possible to watch a D2-MAC programme while recording another D2-MAC programme.
- You can record a D2-MAC programme while watching a PAL programme. In this case, if your television is an auto-RGB type, the D2-MAC programme being recorded forces the television to engage the RGB mode in which television channel setting is not possible. To prevent this, open the D2-MAC FUNCTIONS menu and set both "2. MAC-RGB OUT" and "3. 16:9 FORMAT" to "NO".

LOADING AND UNLOADING A CASSETTE

Loading

Insert a cassette as illustrated. Be sure to insert it firmly into the slot; otherwise, it will be automatically ejected.



- The automatic loading mechanism will operate only when the cassette is inserted correctly.
- With either a VHS or S-VHS cassette inserted, the "cassette loaded" indicator will appear on the FDP. When an S-VHS cassette is loaded, the S-VHS CASS. indicator also lights.

Unloading

Press the CASSETTE button ❹ .

CAUTION

- If unloading of the cassette is not possible, check to see whether the TIMER indicator is lit. If so, press the SCHALTUHR button so the TIMER indicator extinguishes.
- Do not attempt to pull out the cassette once automatic loading has started.
- Do not insert fingers or any foreign object beyond the door of the cassette loading slot, as this could lead to injury or damage to the mechanism. Show special caution with children.

AUTO POWER-ON AND AUTO PLAY SYSTEM

- The cassette can be loaded even when the power has not been turned on. Inserting a cassette into the loading slot turns the power on automatically.
- Inserting a cassette, with its safety tab removed, turns the recorder on and playback of the cassette begins automatically.

POWER-OFF EJECT SYSTEM

- The cassette can be unloaded even after the power has been turned off. Pressing the CASSETTE button turns the power on automatically and, after ejection of the cassette, shuts it off automatically.

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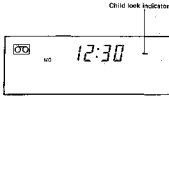
CHILD LOCK FUNCTION

The Child Lock function is for preventing accidental operation by young children, or other unwanted operation, such as playing back or recording over an important cassette you may have intentionally left inserted in the recorder. By engaging the Child Lock mode, the operation buttons on the recorder become ineffective, unless the remote control is used.

To engage the Child Lock mode

- Press the remote control's BETRIEB (VIDEO) button ❺ to turn the recorder power off and keep this button pressed for about 2 seconds after the power LED indicator has gone off.
- The Child Lock indicator (–) will appear in the channel display section on the FDP to show that the recorder is now in the Child Lock mode.



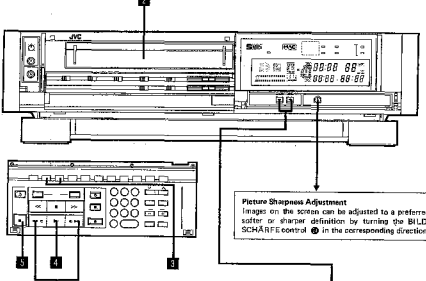
To disengage the Child Lock mode

- When the remote control's BETRIEB (VIDEO) button is pressed to turn the recorder power on, this disengages the Child Lock mode. The recorder will turn on and the corresponding display will appear with the channel number appearing where the child lock indicator appeared before.
- Pressing the SCHALTUHR button during timer recording also disengages the Child Lock mode.

Notes:

- While in the Child Lock mode, the recorder can receive timer programmed data from the remote control.
- Timer recording is possible also, even while in the Child Lock mode. After timer recording has been performed, the Child Lock mode remains in effect.
- Even after automatic cassette ejection at tape end, following timer recording, the Child Lock mode remains in effect.
- It is possible to insert a cassette while in the Child Lock mode. After inserting a cassette, the Child Lock mode remains in effect.

PLAYING BACK A VIDEO CASSETTE



Picture Sharpness Adjustment
Images on the screen can be adjusted to a preferred softer or sharper definition by turning the BILD-SCHÄRFE control ❸ in the corresponding direction.

SHUTTLE SEARCH
Shuttle Search allows high-speed playback at 9 times normal speed in either direction.

1. Press either RÜCKLAUF or VORLAUF Shuttle Search ❺ or ❹ during playback.
2. To cancel the Search mode, press WIEDERGABE/X2.
   - For briefer scanning, keep the Shuttle Search button pressed for more than 2 seconds; when you release the button, the Search mode will be cancelled.

7 Turn the TV receiver on and set it as required. (See pages 60 and 61.)
1 Load a pre-recorded cassette.
- Power will be switched on automatically.
- When the cassette loaded has no safety tab, playback will start automatically.

2 Make the AUDIO MONITOR ❷ and AUDIO MIX ❶ setting as required. (See page 72.)
4 Press WIEDERGABE/X2 ❶ .
3 Press STOP ❹ at the end of the programme.
- The tape will be rewound automatically when its end is reached and the recorder will enter the Stop mode.

Notes:

- The SP or LP mode recording is automatically detected and played back at the correct speed.
- Irrespective of the S-VHS mode button setting, the S-VHS or VHS recording mode is automatically detected and played back in the correct mode. The S-VHS mode indicator lights for playback of S-VHS recordings.

DIGITAL AV TRACKING SYSTEM

This recorder incorporates a digital AV tracking system for automatic tracking adjustment. In most cases you do not have to adjust tracking.

- When you start playback after inserting a tape, the digital tracking system automatically adjusts the tape path relative to the heads to obtain the best possible pictures and Hi-Fi stereo sound.
- If there is no recorded Hi-Fi audio, tracking is set referring only to the video signal. The audio output is automatically switched to normal audio.
- This automatic adjustment also takes place when the playback output level reduces below a certain level.
- The AUTOM. SPURLAGE indicator ❶ blinks while the system is searching for optimum tracking, and remains lit as long as the automatic tracking mode continues.

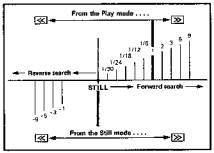
If automatic tracking fails, and some noise bars are visible on the screen, use the manual tracking mode.

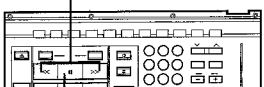
- Press the SPURLAGE +/– buttons ❷ simultaneously to cancel the automatic mode, then press either button to move noise bars off the screen.
- To return to the automatic mode, press both buttons simultaneously.

SPECIAL-EFFECTS PLAYBACK

Variable search (VARI-SUCHLAUF, ≪ and ≫ ❻ or ❼):
Variable speed search is possible in either forward or reverse direction from either the Still or Play mode.

- To search in the forward direction:
  - Press the ≫ button in the Play mode to start fast-motion searching from 2 times normal speed. To increase speed (to 3, 6, 9 times normal), press ≫ repeatedly.
  - Press the ≫ button in the Still mode to start slow-motion searching from 1/30 normal speed. To increase speed (to 1/24, 1/18, 1/12, 1/6, normal, X2, X3, X5, X9), press ≫ repeatedly. To decrease speed, press ≪ repeatedly. (Pressing the ≪ button in the Play mode, starts slow-motion searching at 1/6 normal speed.)
- To search in the reverse direction:
  - Press the ≪ button in the Still mode to start searching in the reverse direction at the same speed as normal speed playback. To increase speed (to -3, -5, -9 times normal), press ≪ repeatedly. To decrease speed, press ≫ repeatedly.
- To return to the normal Play mode, press the WIEDERGABE/X2 button.





STILL PICTURE
1. Press PAUSE/STANDB. ❻ during playback.
2. To advance the still picture, press PAUSE/STANDB. a number of times.
3. To cancel the Still mode, press WIEDERGABE/X2.

Notes:
- When the Still mode continues for longer than about 5 minutes, the Stop mode will be entered automatically.
- With some televisions, the still picture may be unstable. This is not due to any defect of the unit. If vertical vibration of the picture is observed, attempt to correct it by turning the V-BILDFANG control on the rear of the video recorder.

Notes:
- No audio is available during any Special-effects playback mode.
- If noise bars are visible while in a Special-Effects Playback mode, first press the WIEDERGABE/X2 button to engage the normal Play mode; then press the SPURLAGE -/+ buttons simultaneously to cancel the Automatic Tracking mode. Next, press the corresponding button to return to the previous Special-Effects Playback mode, and then perform the manual tracking adjustment as described on the previous page.

DOUBLE SPEED PLAYBACK
- Press WIEDERGABE/X2 ❻ while in the Play mode; double-speed playback will be engaged.
- To resume normal playback, press the same button again.

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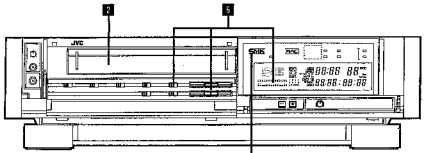
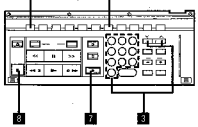
BASIC OPERATION FOR RECORDING TV PROGRAMMES





Pause mode indicator

1 Turn the TV receiver on and set it as required.
2 Load a cassette (with safety tab in place).
- Power will be switched on automatically.

3 Press either TV PR. (∨/∧) button ❹ or the numeric keys ❹ to select the channel you wish to record.
4 Select the recording speed with SP/LP button ❸.
SP: 4 hours with an E-240 cassette.
LP: 8 hours with an E-240 cassette. (Check the SP/LP indicator on the FDP.)
5 For S-VHS recording, press S-VHS button ❸ so that the S-VHS indicator ❹ will light.
6 Make Hi-Fi audio recording level adjustment as required. Refer to page 71.)
- For automatic level adjustment, simply set the AUDIO-BEGRENZER switch ❹ to EIN.

7 Press AUFN./DA ❹ to start recording.
- Be careful to press AUFN./DA only once, or Instant Timer Recording will begin.
- Press (❻), ❻ and I ▶ /X2) ❻ simultaneously when using the remote control unit.
- If there is part of the programme you do not want to record, press PAUSE/STANDB. ❻ . A white horizontal bar will appear on the screen, which reduces in size in 4 steps as time elapses. When the last quarter starts blinking and disappears, the Stop mode will be entered automatically. The pause duration is possible for about 5 minutes.
- To continue recording from the Pause mode, press WIEDERGABE/X2 while the white bar is on-screen.

8 Press STOP ❻ at the end of the programme.
- When the end of the tape is reached during recording, the tape is automatically rewound and stops.

INSTANT TIMER RECORDING
If you wish for recording to stop automatically after a certain period of time, use this Instant Timer Recording mode.
1. Press AUFN./DA during recording (or twice if in the Stop mode).
   - Recording will begin and the FDP shows " AUT 0:30", indicating that recording will automatically stop and power will switch off after 30 minutes.
2. Ajust the switch-off timer, if necessary.
   - Press AUFN./DA to increase the time in 30-minute increments (possible up to 4 hours).
   - Use the numerick keys to set to a more precise time when required (possible up to 8 hours 59 minted. Always key in a full number indicating hours and minutes. For "0:35", key in zero first. After setting the time, press AUFN./DA immediately.

Notes:
- When recording is restarted from the Pause mode, assemble recording is performed so that the playback picture will not distort at the edit point.
- The selected channel cannot be altered during recording. If you wish to change the channel, first engage the Pause mode and then select a different channel.

RECORDING A TV PROGRAMME WHILE WATCHING ANOTHER

A programme not being viewed can be recorded while you enjoy another programme. This permits the recorded programme to be played back later at your convenience.
The recording procedure is exactly the same as described on the previous page. The points to be remembered are:

- Select the channel you wish to record with the recorder's channel select buttons.
- Select the channel you wish to view with the TV receiver's channel selector.

RECORDING PAL STEREO TV PROGRAMMES

(Applicable only to the West German Sound-Multiplex TV system)

If stereo TV programmes are broadcast in your area, this recorder automatically receives them in stereo. When a stereo programme is being received, the STEREO indicator ❶ lights and recording is made in stereo on the hi-fi audio track and in mono (mixed L + R) on the normal audio track. To listen to the stereo soundtrack during recording, press the AUDIO MONITOR button ❷ so that L and R light. If this button is left pressed for either L or R, you will hear only one channel while recording, though the recording is being made in stereo.

RECORDING PAL BILINGUAL TV PROGRAMMES

(Applicable only to the West German Sound-Multiplex TV system)

When a bilingual TV programme is being received, the 2-KANAL indicator ❶ lights. There is a switch to select the soundtrack to be recorded on the normal audio track, however, because both soundtracks are recorded always on the hi-fi track for selective listening, you can ignore the switch labelled PAL 2-KANAL TON ❶ in most cases unless you need a specific soundtrack on the normal audio track.

- Set PAL 2-KANAL TON switch ❶ to HAUPT to record the main soundtrack (local language), to NEBEN to record the sub soundtrack (foreign language).
- To listen to the selected soundtrack from the hi-fi audio track while recording, press the AUDIO MONITOR button for either L or R.
- To listen to the soundtrack being recorded on the normal audio track, press the AUDIO MIX button ❶ for NORM.

ATTENTION

Regarding D2-MAC programmes

When a D2-MAC programme is being received via the built-in tuner, the D2-MAC indicator ❶ lights. If it includes a stereo soundtrack, the STEREO indicator ❶ also lights. If it includes an independent audio programme, the RADIOTON indicator ❶ also lights. The basic recording procedure is identical to that of PAL programmes. For audio selection, see page 70.

Notes:

- To record D2-MAC programmes received by an external satellite tuner, set the recorder to the AUX mode.
- Simulcast recording is not possible with D2-MAC channels.

RECORDING FM SIMULCAST TV PROGRAMMES

FM simulcast TV programmes can be recorded using an FM stereo tuner. Connect necessary components. (Connect the FM tuner to the rear panel AUDIO EING. connectors.) Select the TV channel broadcasting the simulcast programme with the recorder's channel select buttons and tune the FM stereo tuner to the station broadcasting the soundtrack for this TV programme.
The only difference from the basic recording procedure is an additional step after step 5 on page 77.

- Press SIMUL button ❶.
  Then the SIM indicator will light. With this setting, the video and audio signals from the built-in tuner will be recorded on the video and normal audio track and the audio signal from FM stereo tuner will be recorded on the hi-fi audio track.

Notes:

- After finishing recording, be sure to press the SIMUL button to switch back to the Tuner.
- While recording simulcast programmes, it might happen that the hi-fi sound distorts momentarily at switching points between different programmes. This is not due to any defect of the unit.

RECORDING A TV PROGRAMME WHILE RECORDING AN INDEPENDENT AUDIO SOURCE

Using the "simulcast" recording function, you can record independent audio and video programmes, because the TV soundtrack is not lost, but recorded on the normal audio track. While recording a TV programme, record any audio source independently.

- Connect an audio component (such as an FM tuner) to the AUDIO EING. connectors ❶.
- Press SIMUL button. The SIM indicator on the FDP will light.

Notes:

- If you stop recording to avoid unwanted material of the TV programme using the PAUSE/STANDB. button, the audio programme from an external source is also cut.
- If television broadcasting comes to an end during recording, the hi-fi sound being recorded from an external source may distort. It is recommended that you check the timetable of TV broadcasts in advance.
- After finishing recording, be sure to press the SIMUL button to switch back to the Tuner; otherwise recording on the hi-fi audio track from the built-in tuner will not be possible.

USING THE HR-S9000EG AS AN AUDIO TAPE DECK

You can record audio only (without recording any video signal) on the hi-fi audio track. This means you can record a continuous 8-hour FM programme onto a single cassette (E-240).

- Connect an audio source (such as an FM tuner) to the AUDIO EING. connectors.
- Tune the built-in tuner to a vacant channel.
- Press SIMUL button. The SIM indicator on the FDP will light.

The Index Search function gives you automatic access to locations on the tape where index codes are recorded. Index codes are recorded automatically at the beginning of recordings which are started from the Stop or Timer Standby mode, or recorded manually at any other position during recording or playback. Unnecessary codes can be erased manually during playback. In neither case is there any effect on the audio or video recordings on the tape. With this recorder, you can access any one of up to 9 of these indexed segments in either the forward or reverse direction.

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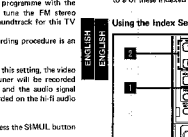
Using the Index Search function

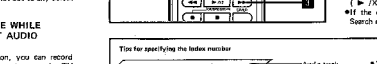


1. Press INDEX ❷ while in the Play or Stop mode.
   - The channel display on the FDP will change to the Index Search mode and the "INDX" indicator will light.
2. Specify the index number using one of the numeric keys ❶ (1 – 9) within 10 seconds.
   - The specified number will appear on the FDP.
3. Press either ◀◀ or ▶▶ ❶.
   - The tape will move and the index numbers count down to 0, where normal playback will start.
   - If the INDEX button was pressed in the Play mode, the screen shows search pictures; if the button was pressed in the Stop mode, the index codes are detected in the much faster Rewind or Fast-Forward mode.

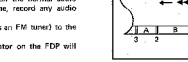
Notes:

- To cancel the Index Search mode before completion, press (▶ /X2) ❶ or (■) ❶.
- If the end of the tape is reached while still in the Index Search mode, the mode is cancelled and the tape rewound.

Tips for specifying the index number



- "1" + ▶▶ moves playback to the beginning of segment D.
- "1" + ◀◀ moves playback to the beginning of segment C.
- "2" + ◀◀ moves playback to the beginning of segment B.
- If no number is entered, a value of "1" is assumed.



Marking extra index codes

1. Press INDEX MARKE ❷ while in the Record or Play mode.
   - An index code will be recorded on the tape.
   - The MARKE indicator ❶ will blink while the index code is being recorded.

Erasing index codes

1. Press INDEX LOSCHEN ❶ while in the Play mode.
   - First the Shuttle Search mode will be engaged and, when an index code is detected, it will be erased automatically. Then the Erase mode will be cancelled and playback resumes.
   - The LOSCHEN indicator ❶ remains lit during the searching process and blinks while the code is being erased.

Notes:

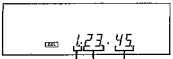
- Index codes cannot be added or erased on a tape with its safety tab removed.
- While the index code is being searched for in the Erase mode, random noise appears on the screen.
- Audio is muted in both the Mark and the Erase modes.
- Marking index codes is not possible while audio dubbing or insert editing is being performed.

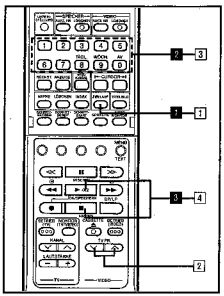
REALTIME TAPE COUNTER FUNCTIONS

Unlike usual tape counters which show tape locations in numbers, this realtime tape counter shows tape time precisely in hours, minutes and seconds in all modes (Record, Play, Rewind, Fast Forward).

Time Go-to function

The Time Go-To function gives you direct access to any point on the tape by simply specifying the time from the beginning of the tape.





1 Press ZIELLAUF ❹ while in the Play, Stop or Still mode.
●The counter will change to the Go-To mode.
2 Specify the time (from the beginning of the tape) to the point to be located, by using the numeric keys ❹ .
●Always key in a full number.
3 Press (▶ /X2) ❹ or (■) ❹ .
●Depending on the situation, search will take place either in the Shuttle Search mode or in the Rewind or Fast Forward mode which is much faster than the Shuttle Search mode. After the specified point is reached, playback starts automatically or the tape stops automatically depending on the command.

Pressing ▶ /X2 from Play or Still mode:	Shuttle Search → Automatic start of playback
Pressing ▶ /X2 from Stop mode:	Rewind or Fast-Forward → Automatic start of playback
Pressing ■ from Play, Still or Stop mode:	Rewind or Fast-Forward → Automatic stop

●If the recorder did not detect the leader tape when the cassette was loaded (indicated by "-St-/-m-/-s" when the Go-To button is pressed), the tape is first rewound to the beginning of the tape and then is fast-forwarded to the specified point.

Time Search function

The Time Search function lets you locate a point on the tape a specified time span away from the current position in either direction.

1 Press ZIELLAUF ❹ while in the Play, Stop or Still mode.
2 Press TV PR. "∨" or "∧" ❹ to specify the direction of search.
3 Specify the time (from the current position) to the point to be located, by using the numeric keys ❹ .
4 Press (▶ /X2) or (■).
●The tape will move to the specified point and automatically start playback or stop.

Notes:
●Each step in the operation procedure must be followed by the next within 60 seconds, otherwise the Go-To or Search mode will be cancelled.
●If the ZIELLAUF button is pressed while in the Play or Still mode, a still picture can be obtained when the specified point is reached, if you press the (❚❚) button instead of the (▶) or (■) button after keying in the time.
●Use of other control buttons, while in either the Time Go-To or Search mode, cancels that mode.
●If the specified time exceeds the tape length, the tape fast forwards to the end and then rewinds to the beginning and stops.

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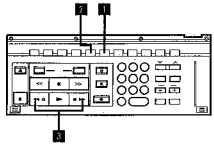
COUNTER MEMORY FUNCTION/LAP TIME INDICATION



Counter Memory function

1 Press ZÄHLWERK-RÜCKST. ❹ at a point which you may wish to locate later.
●The counter will read "00h 00m 00s".
2 Press ZÄHLWERK-SPEICHER ❹ . [S] will appear on the FDP.
3 Press RÜCKLAUF (or VORLAUF) ❹ (or ❹) when you need to return to the designated point.
The tape will rewind (or fast forward) and stop at about the "00h 00m 00s" counter reading automatically.

Lap Time Indication

When you need to know the exact time of a recording, press the ZÄHLWERK-RÜCKST. button before starting recording or playback. The counter will be reset to "00h 00m 00s" and show the exact elapsed time as the tape runs.

REMAINING TAPE TIME INDICATOR

The tape counter is switchable to the remaining tape time indicator.

1. Press ANZEIGE ❹ or ❹ to obtain the Remain mode (RESERVE).

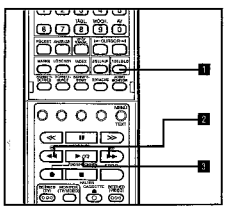
2. The remaining length will be shown in hours and minutes.

Notes:
●During recording, the remaining tape length is calculated in reference to the recording mode selected by the SP/LP button; during playback, it is calculated in reference to the recording mode of the tape being played (SP/LP).

●The indicated remaining time is approximate. The time required to calculate the remaining tape length and the accuracy of that calculation may vary according to the type of cassette tape. (The remaining time indication is not available if this mode is engaged from Fast Forward or Rewind.)

INTRO SEARCH FUNCTION

The Intro Search function lets you visually check the contents of each recording by playing back in fast motion a short segment of a programme each time an index code is detected.



1 Press TITELBILD ❹ while in the Play or Stop mode.
●The INDX indicator on the FDP will light.
2 Press the (▶▶) or (◀◀) button ❹ within 2 seconds.
●The Intro Search will start in the corresponding direction.
●Each time an index code is detected, the corresponding part is played back at the search speed (9 times normal) for about 5 seconds.
3 When you find the section you want to view, simply press the (▶ /X2) button ❹ .
●Normal playback will start.

NEXT-FUNCTION MEMORY

Memory Play function

- If you want to watch the tape from its beginning after rewinding, press the RÜCKLAUF button and then WIEDERGABE/X2 within 2 seconds. Playback will start automatically at the beginning of the tape. (Check to see that the counter memory indicator [5] is off.)

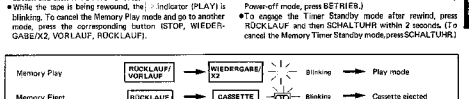
If you want to watch the tape from the counter reading of "0h 00m 00s" press the ZÄHLWERK-SPEICHER button to obtain [5]. Then, press the RÜCKLAUF (or VORLAUF) button and then WIEDERGABE/X2.

- While the tape is being rewound, the ▷ indicator (PLAY) is blinking. To cancel the Memory Play mode and go to another mode, press the corresponding button (STOP, WIEDERGABE/X2, VORLAUF, RÜCKLAUF).

Memory Eject/Power-Off/Timer Standby

If you are going to eject the cassette, turn the power off or engage the timer Standby mode after rewinding the tape, you do not have to wait for completion of rewind to press the corresponding button.

- To eject the cassette after rewind, press RÜCKLAUF and then CASSETTE within 2 seconds. (To cancel the Memory Eject mode, press STOP.)
- To turn the power off after rewind, press RÜCKLAUF and then BETRIEB within 2 seconds. (To cancel the Memory Power-off mode, press BETRIEB.)
- To engage the Timer Standby mode after rewind, press RÜCKLAUF and then SCHALTUHR within 2 seconds. (To cancel the Memory Timer Standby mode, press SCHALTUHR.)



AUDIO DUBBING

Audio dubbing means recording a new soundtrack on a pre-recorded tape. In other words, the previously recorded sound is erased and replaced with a new soundtrack. **Audio dubbing is applicable only to the longitudinal audio track (normal audio).** Therefore, a dubbed narration can be heard together with the original hi-fi sound.

1. Switch on the TV receiver and set it as required.
2. Load a pre-recorded cassette. Power will be switched on automatically.
3. Connect a microphone or an audio source to the MIKROFON jack ⓫ or the A/V2 EING. socket ⓬ respectively.
   - With both microphone and audio source connected, mixed sound is recorded.
   - The AUDIO EING. connectors can also be used for audio dubbing. In this case, set the EINGANGS-WAHL switch to "S".
4. Press "0" of the numeric keys ⓭, and set the EINGANGS-WAHL switch to AV2.
   - If you record sound only from the microphone, the source equipment connected to the A/V2 EING. socket should be off.
5. Press WIEDERGABE/X2 ⓮ to start playback and then press RÜCKLAUF or VORLAUF ⓯ or ⓰ to search for the point from which you wish to start audio dubbing.
6. Press PAUSE/STANDB. ⓱ at the start-point of audio dubbing.
7. Press VERTONUNG ⓲.
8. Press WIEDERGABE/X2.
   - Audio dubbing will start.

Notes:

- It is recommended that you use a lower-impedance microphone.
- If whistling or howling is heard during audio dubbing, reduce the TV volume or move the microphone farther away from the TV. Recording is being performed even if sound is not heard from the TV receiver. If you want to monitor the sound being recorded, connect headphones to the KOPFHÖRER jack.
- When a microphone is connected to the MIKROFON jack, set the AUDIO-BEGRENZER switch to the EIN position.

AUTOMATIC TIMER RECORDING

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The built-in 1-year/8-event timer can be programmed in several ways. Use any method depending on your situation.

A. Automatic programming: Programme the timer through automatic reading of teletext TV schedule information.
B. Colour on-screen programming: Programme the timer using the remote control while referring to the big on-screen colour display.
C. Local programming: Programme the timer using the recorder's controls while referring to the recorder's FDP.
D. Direct remote programming: Programme the timer using the remote control's keys while referring to the recorder's FDP.
E. Independent remote programming: Pre-programme the remote control's LCD memory and then transfer the data to the recorder whenever necessary.

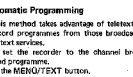
General Precautions On Timer Recording

- Make it a rule to load a cassette (with safety tab in place) before starting timer programming.
- After having programmed the timer, do not forget to engage the recorder in the Timer Standby mode by pressing the SHALTUHR button.
- After pressing the SCHALTUHR button, be sure to check the FDP for error indications.

A. Automatic Programming

Since this method takes advantage of teletext broadcasts, use it to record programmes from those broadcasters which provide teletext services.

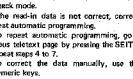
1. First set the recorder to the channel broadcasting your desired programme.
2. Press the MENÜ/TEXT button.
3. Press numeric key "5".
   - This will directly call a teletext page guiding broadcast schedule pages. Then select the desired schedule page by pressing the yellow or green key.
   - If "5. VPT WITH TOP" is not displayed, select "1. TELETEXT" and call a broadcast schedule page using one of the page access modes (See pages 90 through 93.)
4. Press the CURSOR "→" button: the cursor will appear.



Cursor

5. Move the cursor to the programme you want to record.
   - If you wish to check hidden information, press the FREIGABE button.
6. Press the OK/SPEICHERN button.
   - The screen will change to the Programme Check mode.

7. Check whether all items have been read correctly. Also check the title of the programme.
   - The first line of the title is written in.
   - Hidden information, if any, in the title of the programme, cannot be read.
   - The channel and date that have been set are the channel and date of the current teletext broadcast. If they do not correspond to your intended settings, correct them with 10-key input.
   - To cancel the title only, press the RÜCKST. button. Pressing the same button again cancels all read-in data.
   - The empty programme memory with the lowest number is automatically selected.
   - If all memories are full, the message "PROG. OCCUPIED" appears.
   - The VPS code of a VPS programme is also automatically read and "VPS" appears in the "VPS" column. If the VPS time differs from the actual schedule, pressing the VPS button to cancel VPS recording will change the time data automatically. This is possible only in the Programme Check mode.
8. If the read-in data is not correct, correct it manually or repeat automatic programming.
   - To repeat automatic programming, go back to the previous teletext page by pressing the SEITE "–" button and repeat steps 4 to 7.
   - To correct the data manually, use the CURSOR and numeric keys.
   - When programming to record a foreign broadcast, pay attention to the differences in time. If the VCR's clock and the teletext time information are different, a warning "DIFFERENT TIME ZONE" will appear. Correct the start and stop times accordingly.
   - With some teletext broadcasting systems, data reading errors may occur.
9. If all data is OK, press the OK/SPEICHER button.
   - Timer programming is completed.



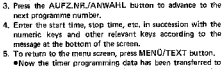
10. To continue programming, go back to the previous teletext page by pressing the SEITE "–" button and repeat steps 5 to 9.

11. To go back to the menu screen, press the MENÜ/TEXT button.

Note:
- If the cursor will not advance to the desired programme on the teletext screen, press the CURSOR "←" button for at least two seconds. This will expand the range of programmes that can be selected.

B. Colour on-screen programming

1. Press the MENÜ/TEXT button.
2. Press numeric key "2". The menu screen will change to the Programme Set mode, and programme number "1" is ready for entry.
3. Press the AUFZ.NR./ANWAHL button to advance to the next programme number.
4. Enter the start time, stop time, etc. in succession with the numeric keys and other relevant keys according to the message at the bottom of the screen.
5. To return to the menu screen, press MENÜ/TEXT button.
   - Now the timer programming data has been transferred to the VCR. Advancing to another programme by pressing the AUFZ.NR./ANWAHL button also transfers the data to the VCR.

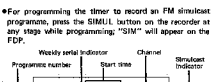


C. Local Programming

1 Press AUFZ. NR. ❷ .
- The display will change to the Timer Set mode for programme number "1". To advance to programme numbers 2 – 8, press AUFZ. NR.

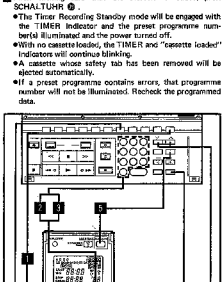
2 Enter the start time using numeric keys ❸ .
- Invalid numbers will be rejected.
- To key in a one-digit number of hours or minutes, first press "0". Then press the relevant numeric key.

3 When the display changes to the next stage, key in the stop time, date and channel in succession using numeric keys.
- To record a daily serial starting on the day of setting, press VOR "^." ❹ without entering any date figure.
- To record a daily serial starting on a certain day, press 1 and enter the date.
- To record a weekly serial, press 1 and enter the date.
- When not using the VPS recording system, before setting the channel, press KANAL/VPS ❹ to make "VPS" disappear on the FDP.
- For keying in channel numbers, refer to page 64.
- For programming the timer to record an external source, press the numeric key "0" while the channel display is blinking: "AU" will appear on the FDP.
- For programming the timer to record an FM simulcast programme, press the SIMUL button on the recorder at any stage while programming; "SIM" will appear on the FDP.



1 Press SP/LP ❶ to obtain the desired recording mode indication on the display.
- The SP or LP entry can be made anytime while in the Timer Set mode.

2 After making sure that the cassette is loaded, press SCHALTUHR ❷ .
- The Timer Recording Standby mode will be engaged with the TIMER indicator and the preset programme number lit illuminated and the power turned off.
- With no cassette loaded, the TIMER and "cassette loaded" indicators will continue blinking.
- A cassette whose safety tab has been removed will be ejected automatically.
- If a preset programme contains errors, that programme number will not be illuminated. Recheck the programmed data.

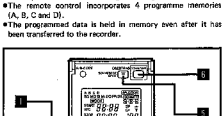


D. Direct Remote Programming

Following the procedures above, use the remote control's buttons instead of the recorder's with the remote control directed toward the recorder's Remote Sensor window ❶ .

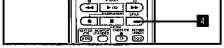
E. Independent Remote Programming

- The remote control incorporates 4 programme memories (A, B, C and D).
- The programmed data is held in memory even after it has been transferred to the recorder.



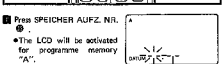
1 Press SPEICHER AUFZ. NR. ❸ .
- The LCD will be activated for programme memory "A".
- To advance to programmes B to D, press again.

2 Enter the date using numeric keys ❸ .
- Setting for a daily or weekly serial is the same as described in "A. Local Programming".



For daily serial setting — For weekly serial setting

3 When the display changes to the next stage, enter the start time, stop time and channel in succession.
- When not using the VPS recording system, before setting the channel, press VPS/KANAL to make "VPS" disappear.
- For programming the timer to record an external source, press the numeric key "0" while the channel is blinking: "0" will appear on the LCD and when transferred in step 4 , "AU" will appear in the channel display section on the FDP.
- After the channel has been entered, the transfer-ready mark will appear and blink.



4 Press SP/LP ❶ to obtain the desired recording mode indication on the display.
- The SP or LP entry can be made anytime while in the Timer Set mode.

5 Direct the remote control to the recorder's Remote Sensor window ❶ and press ÜBERTRAG ❹ .
- The programmed data will be loaded in one of the recorder's memories (1 – 8), the vacant one of the smallest programme number.
- If all programme memories are full, the recorder's clock will blink and transference will not take place.
- Call up the programme(s) to be cancelled by pressing VIDEO AUFZ. NR. ❸ , then press VIDEO LÖSCHEN ❸ to cancel it. Data transfer can now be made by pressing ÜBERTRAG again.

6 Press SCHALTUHR ❷ .
- Check to see that the TIMER indicator and other items on the recorder's FDP respond correctly. (See page 84.)

Setting the date, start and stop times, and channel

- It is not possible to set the date, start and stop times unless the date and clock have previously been set.
- Enter the data while the digits are blinking.
- The stop time can be set within 24 hours from the start time.
- Non-applicable numbers (such as January 32, February 30 for dates, 24 or larger for hours, 60 or larger for minutes and 49 or larger for channels) will be rejected when keyed in.

Cancelling the preset data

- The preset programmes can be cancelled. First engage the Timer Set mode for the programme number you wish to cancel and then press the LÖSCHEN/ÜBERSPRINGEN button ❸ or VIDEO LÖSCHEN ❸ . Or for the remote control's memory, press SPEICHER LÖSCHEN ❸ .
- An executed programme is automatically cleared.

Checking the programmed data

- Checking and re-programming can be performed anytime, even when the SCHALTUHR button has already been engaged.
- While recording is actually taking place according to one preset programme, all other preset programmes can be checked or re-programmed.
- To disengage the Timer Set mode, press the ANZEIGE button ❶ (❶).

Timer recording operation

- When the preset start time is reached, recording starts.
- After timer recording, the power is switched off. If the tape end is reached during timer recording, the cassette is automatically ejected and the power is switched off.

How to use the cursor keys ❸ ❹
- If you press a wrong key and the flashing position has advanced, press ZURÜCK to return to the previous position for correction.
- Once all data have been programmed, you can reach any position for correction using ZURÜCK or VOR. The flashing position is ready for re-entry.
- Pressing AUFZ. NR. on the recorder or VIDEO AUFZ. NR. on the remote control engages the FDP in the check mode in which no position flashes and data correction is not possible. Pressing SPEICHER AUFZ. NR. on the remote control engages the LCD in the transfer-ready mode in which the transfer-ready mark is flashing and data correction is not possible. For correction of data, press either cursor key to move to the position which requires correction.

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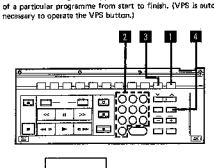
VPS RECORDING

In the VPS (Video Programme System) system, TV stations transmit different VPS codes for different TV programmes, which control the starting and stopping of the video recorder and have precedence over times preset in the timer for accurate recording of a particular programme from start to finish. (VPS is automatic with automatic programming via teletext information. It is not necessary to operate the VPS button.)



1. Press AUFZ.NR. ❺ (or VIDEO AUFZ. NR. ❹) or, for the remote control's memory, SPEICHER AUFZ. NR. ❹ .
2. Set the date, start time, stop time and channel in the same way as for timer programming.
3. Press KANAL/VPS ❻ or VPS/KANAL ❻ .
   - All timer data will be converted to VPS codes and stored in memory.
4. Press SCHALTUHR ❹ , or ❹
   - The recorder will enter the VPS standby mode at 20:00 on the day previous to the preset day and remain engaged until 3.59 on the following day, if the intended programme has not yet been broadcast.
   - When a VPS code corresponding to the intended TV programme is detected during the VPS standby mode recording will start. When the VPS code changes to another, recording will stop.
   - When an interruption code is detected during VPS recording, the VPS standby mode is engaged and recording restarts when the regular VPS code is restored.

Note:
- Operation at the end of VPS recording is the same as with ordinary timer recording.

RECORDING FROM AN EXTERNAL SOURCE

By connecting an external video source (such as a 2nd video recorder, VideoMovie camera-recorder, etc.) to the A/V2 EING. socket, editing is possible.

- For connection of these units an appropriate cable is necessary.

Connection
1. Connect the A/V2 EING. socket ❹ to the appropriate audio/video output of the 2nd video recorder.
2. Connect a TV receiver to the recorder to monitor the picture while recording.

Operation
1. Turn the power on for all connected equipment.
2. Tune the TV receiver to your video channel.
3. Load a cassette with its safety tab in place.
4. Press either TV PR. button ❹ or the numeric key 0/AV ❹ to obtain "AU" in the channel display section on the FDP.
5. Set EINGANGS-WAHL ❹ to AV2.
6. Press the SP/LP button ❹ for required mode.
7. Press the AUFN./DA button ❹ and the PAUSE/STANDB. button ❹ to put the recorder in the Record Pause mode.
8. Play back a tape or the source equipment to determine the segment to be recorded.
9. Press the WIEDERGABE/X2 button ❹ to start recording.
10. To stop recording temporarily, press the PAUSE/STANDB. button.
11. To end recording, press the STOP button ❹ .

Note:
- For the operation of the source equipment, refer to the instruction manual of the relevant machine.

Editing from a VideoMovie
This recorder is equipped with a remote PAUSE FERNBEDIENUNG terminal. When the recorder is connected to a VideoMovie which incorporates a Master Edit Control system, you can control the recorder with the VideoMovie's controls for making edits free of transition-point gaps and distortion. Refer to the VideoMovie's instruction manual for detailed operating procedures for editing.

Note:
- For direct recording with a video camera, a camera adaptor is also necessary.

Recording from other S-VHS equipment
For recording sources which deliver separated Y/C signals, use the S EING. connector ❹ or the A/V2 EING. peri-connector ❹ , and proceed as follows:
(1) Insert an S-VHS cassette.
(2) Switch to the S-VHS mode (by pressing the S-VHS button ❹).
(3) Select the AUX mode (by pressing the numeric key "0").
(4) Set the EINGANGS-WAHL switch ❹ as required.
S : To record from the S EING. connector.
AV2 : To record from A/V2 EING. peri-connector.

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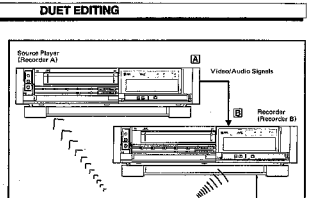
DUET EDITING

DUET EDITING
Designed specifically to simplify editing operations, the Duet Editing function delivers separate commands to two recorders simultaneously via a single remote control, taking advantage of the A/B code system. (JVC dedicated models only.)

Preparations
- Connect two recorders as described in "RECORDING FROM AN EXTERNAL SOURCE" on the previous page.
- Set one recorder to respond to A code signals, the other, to respond to B code signals. (See page 86.)
- Place the two recorders side by side.

Note:
- JVC video recorders with infrared remote control units which are not equipped with an A/B-CODE select switch are designed to receive A-code signals. Therefore, Duet Editing is possible with a JVC deck if the HR-S9000EG is set to respond to B-code signals.
- It is not possible to perform Duet Editing unless the remote control's clock has been previously set.



OPERATION

Remote Control	Recorder A (Source player)	Recorder B (recorder)
	Load a recorded tape.	Load a blank tape.
1. Press SCHNITT-BETRIEB. "SCHNITT A → B " appears on LCD.		
2. Press SCHNITT-BEREIT.	Enters STILL mode.	Enters RECORD-PAUSE mode.
3. Search for an edit-in point on the source tape. Press ❹ .	Functions as commanded. (In this state, only recorder A responds to the remote control's commands.)	Remains in RECORD-PAUSE mode.
4. Press SCHNITT-START.	Enters PLAY mode.	Enters RECORD mode.
5. Press ❹ .	Enters STILL mode.	Enters RECORD-PAUSE mode.
6. Repeat steps 3, 4 and 5 to continue editing.		

Notes:
- You can use Recorder B (the recorder set to respond to B code signals) as a source player and Recorder A as a recorder. In this case, press the A/B-CODE button after step 1 to obtain "SCHNITT B → A " indication.
- To cancel the Duet Edit mode and return to normal remote control functions, press the SCHNITT-BETRIEB button so that the SCHNITT indication disappears.
- When the SCHNITT-START button is pressed, the recorder takes a few seconds before actual editing starts due to the automatic backspace editing system. At the same time the SCHNITT-START button is pressed, the player starts playback from the specified edit-in point. Therefore, it is recommended that you specify a point slightly before the intended edit-in point in step 3 for more accurate editing. This also ensures that the picture of the resulting edit will be more stable.

INSERT EDITING

Insert editing means recording a new scene into a section of pre-recorded tape so that a part of the original recording can be replaced with a new sequence without excessive picture distortion at edit-in and edit-out points. Thanks to the flying erase head, clean edits can be obtained. New video and audio signals to be inserted can come either from another video cassette recorder or the built-in tuner.

CAUTION
Since video and audio signals are recorded simultaneously, both are replaced with new recordings simultaneously. However, the normal audio soundtrack remains unchanged.

Setting options of the relevant controls

Settings / Source	Settings
To insert programmes from a different tape	EINGANGS-WAHL switch and SIMUL button AV2 or S (with S-VHS ⑨ set as required)
To insert TV programmes from the built-in tuner	Select a channel (SIMUL button pressed to OFF)
To insert FM simulcast programmes	SIMUL (button pressed to ON)

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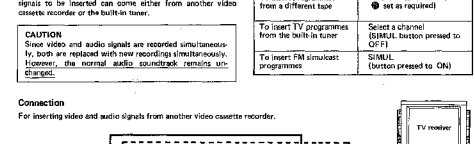
Connection

For inserting video and audio signals from another video cassette recorder.



Procedure

1 Switch on the TV receiver.
- Set the TV receiver as required.

2 Load a pre-recorded cassette.

3 Set the EINGANGS-WAHL switch and press the SIMUL and S-VHS buttons as required. (See chart above.)

4 Set the Hi-Fi audio recording level. (See page 71.)

5 Play back the tape to determine the edit-out point (the end of the tape section to be replaced).

6 Press the PAUSE/STANDB. button ⑥ at the edit-out point.

7 Press the ZÄHLWERK-RÜCKST. button ⑧.
- The counter will be reset to "00s 00m 00x".

8 Press the RÜCKLAUF button ⑩ to determine the edit-in point (the beginning of the tape section to be replaced).

9 Press the PAUSE/STANDB. button ⑥ at the edit-in point.

10 Press the INSERT button ⑥.
- This engages the Insert Standby mode in which the input signal can be monitored on the TV screen; the still picture changes into the input signal that you are going to record.
- The input sound signal can also be monitored.

11 Operate the source equipment properly.
- Play back on another recorder the tape programme to be inserted.
- Select the channel to be recorded.
- Select the channel and set the FM tuner.

12 Press the WIEDERGABE/X2 button ⑥ to start insert editing.
- Now video and audio signals will be recorded simultaneously.
- At the counter reading of "0s 00m 00x", recording will stop automatically.
- The tape will continue running in the Play mode.

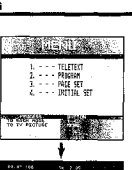
Notes:
- Do not use the STOP button ⑥ to stop insert editing. If you press the STOP button, the tape stops and the Insert Edit mode is cancelled.
- If you wish to stop insert editing before the specified edit-out point is reached, press the ZÄHLWERK-RÜCKST. button. Then the Play mode will be entered.
- Insert editing is also possible without determining the edit-out point. Simply start insert editing at the edit-in point and, where you wish to stop insert editing, press the PAUSE/STANDB. button. Since this recorder incorporates a flying erase head, even this simplified procedure makes clean edits, though there may be a slight discrepancy between the actual and intended edit points.
- The recording mode (SP or LP) is automatically determined by the previous recording on which the new segment is inserted regardless of the setting of the SP/LP button ⑥.
- If the edit-in point of the new scene lies in the SP mode and the edit-out point of the same scene lies in the LP mode or vice versa, the inserted picture will distort at the switching point in the Recording mode.
- If there is a non-recorded section on the tape, the Insert Edit mode will be cancelled automatically and the Play mode will be engaged.
- Insert editing is not possible with non-recorded cassettes or cassettes whose safety tab has been removed.

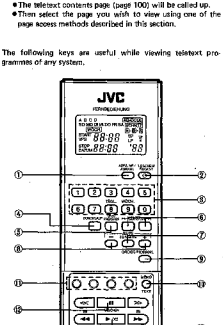
TELETEXT VIEWING

The built-in teletext decoder is compatible with TOP and other teletext systems with automatic system selection. To view teletext pages, first set the tuner to the channel broadcasting your desired teletext programmes.

1. Press the MENÜ/TEXT button.
2. Press numeric key "1" to engage the Teletext mode.
   - The teletext contents page (page 100) will be called up.
   - Then select the page you wish to view using one of the page access methods described in this section.

The following keys are useful while viewing teletext programmes of any system.



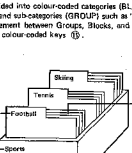


① AUFZ.NR./ANWAHL	⑧ SEITE (-/+)
② LÖSCHEN/RÜCKST.	⑨ G.RÖBS/NORMAL
③ Numeric keys	⑩ MENÜ/TEXT
④ DURCHLAUF	⑪ Colour-coded keys
⑤ FREIGABE	⑫ MISCHEN
⑥ CURSOR	⑬ OK/SPEICHERN
⑦ ZEIT-SEITE	⑭ HALTEN

Notes:
- TV/teletext mixed pictures are not available if an RGB-compatible AV television is used in the AV mode.
- Some of these buttons have other functions when not operating in the Text mode. To use them in the Text mode, first cancel the previously engaged operation mode; or to use them in modes other than Text, first cancel the Text mode.
- Playback of recorded teletext pages may have colour edging or blurring. This is not due to any defect of the unit.

TOP PAGE ACCESS

The TOP system is a teletext service employed in West Germany.
Pages are divided into colour-coded categories (BLOCK) such as "Sports", and sub-categories (GROUP) such as "Football", with all movement between Groups, Blocks, and pages controlled by the colour-coded keys ⑪.



When a TOP broadcast is received, you will find category and sub-category names (Block and Group) at the bottom of the screen in blue and yellow.

- To move to the next block, press the blue key.
- To move to the next group in the same block, press the yellow key.
- To move to the next page in the same group, press the green key.
- To go back to the previous page in the same group, press the red key.

The TOP system offers a special "PAGE TITLE INDEX" page. To call up this page, press the LÖSCHEN/RÜCKST. button ② anytime while in the Teletext mode.

To go to the desired subject, move the cursor to the desired subject by pressing one of the coloured keys ⑬ and press the OK/SPEICHERN ⑨ button.

- Use the red key to scan TV guide pages (indicated in red).
- Use the green key to scan all titles in succession.
- Use the yellow button to scan "Group" titles (indicated in yellow).
- Use the blue button to scan "Block" titles (indicated in blue).

Notes:

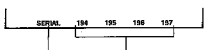
- To go back to the contents page (page 100) from the page title index page, press the LÖSCHEN/RÜCKST. button ②. To go back to the contents page from any other page, press the LÖSCHEN/RÜCKST. button twice.
- You can cancel the TOP page access system by pressing the AUFZ.NR./ANWAHL button ① for 2 seconds. In this case, use regular page access modes described later. To go back to the TOP system, press the AUFZ.NR./ANWAHL button for longer than 2 seconds.

OTHER CONVENIENT PAGE ACCESS MODES

Access mode indication on a teletext page

A. Serial page access mode

In the Serial Access mode, when one page is specified, the subsequent three pages are automatically put in memory. Pages that precede or follow these pages can also be called up by pressing the SEITE "-" or "+" button.



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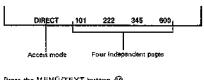
1. Press the MENÜ/TEXT button ⑥.
2. Press numeric key "1" ⑧.
3. Check the bottom line of the screen where the access mode and page numbers are displayed.
   - If "SERIAL" is displayed, you are in the Serial Access mode.
4. To select the Serial Access mode, press the AUFZ.NR./ANWAHL button ① until "SERIAL" is obtained.
5. Enter the number of the page you wish to view with 10-key input ⑧.
   - The selected page will be searched and called up. The subsequent three pages will also be put in memory.
6. To view these pages, press the DURCHLAUF button ④.
7. If you want to successively view pages that precede or follow these pages, press SEITE "-" or "+" button ⑧, instead of DURCHLAUF. This calls up the previous or next serial page, and replaces the first or last page in memory with the page preceding or following it. This process is repeated each time you press the SEITE button so you can successively view as many pages as you like.

B. Direct page access mode

In the Direct Access mode, 4 independent pages can be put in memory for instant call-up. After specifying the desired page numbers with 10-key input, select the one to be viewed with the DURCHLAUF button.



1. Press the MENÜ/TEXT button ⑥.
2. Press numeric key "1" ⑧.
3. Check the bottom line of the screen where the access mode and page numbers are displayed.
   - If "DIRECT" is displayed, you are in the Direct Access mode.
4. To select the Direct Access mode, press the AUFZ.NR./ANWAHL button ① until "DIRECT" is obtained.
5. Enter the number of the page you wish to view with 10-key input ⑧.
   - The selected page will be searched and called up.
6. Move the cursor to the next column and enter the number of another page. Up to 4 pages can be put in memory.
7. Pages in memory can be called up instantly in succession by pressing the DURCHLAUF button ④.

C. Group page access mode

For quick access to favourite or frequently-referred-to pages, you can preset up to 40 pages (4 pages per one numeric key). These preset pages are called up by pressing the corresponding numeric key in the Group Access mode. To preset pages, referring to the PAGE SET menu:

1. Press the MENÜ/TEXT button ⑥.
2. Press numeric key "3" ⑧. The menu screen will change to the Page Set mode, and group number "1" is ready for entry.
   - Initial preset pages are 100, 200, 300 and 400 for all groups.

3. Press the AUFZ.NR./ANWAHL button ① to advance to the next group number.
4. Move the cursor to the page number columns with the CURSOR buttons ⑧ and enter the desired page numbers in succession with 10-key input ⑧.
   - To preset serial pages, simply press the SEITE "+" button ⑧ for the second, third and fourth page number columns.
5. Move the cursor to the channel column "PR." and enter the number of the channel broadcasting those pages (⑥⑧).
6. Repeat the same procedure for other groups.
7. To go back to the menu screen, press the MENÜ/TEXT button ⑥.

To preset pages referring to teletext pages:
This procedure lets you preset pages while confirming the contents of actual teletext broadcasts on the screen.

1. While in the Teletext mode, select the Direct Access mode with the AUFZ.NR./ANWAHL button ①.
2. Enter the numbers of pages you wish to view with 10-key input ⑧ in all the four columns as described in "B. Direct page access mode".
3. Then, select the Group Access mode with the AUFZ.NR./ANWAHL button.
4. Press and hold (for about 2 seconds) one of the numeric keys to which you want to allocate this group.

To call up preset pages, proceed as follows:

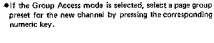
1. Select "1. TELETEXT" on the menu screen.
2. To select the Group Access mode, press the AUFZ.NR./ ANWAHL button ① until "GROUP" is obtained.
3. Press the numeric key ⑧ corresponding to the group number to which the desired pages have been allocated.
   - The first page of the preset pages will be called up.
4. To view the subsequent pages, press the DURCHLAUF button ④.

Notes:
- For selecting subpages (timed pages) see "REGARDING TIMED PAGES".
- Timed pages cannot be preset in the Page Set mode.

D. Television channel access mode

You can switch from teletext programmes on one television channel to those on another channel without returning to the menu screen.

1. If you wish to view teletext pages on a different channel, press the AUFZ.NR./ANWAHL button ① until the indication "TV PR." appears in place of the page access mode.
2. Select a different channel with 10-key input ⑧.
   - A teletext page (if any) from the selected channel will appear on the screen. This page will correspond to the page number on which the cursor was last placed.
3. Select the required page access mode by pressing the AUFZ.NR./ANWAHL button.
   - If the Direct or Serial Access mode is selected, the page numbers on the screen will function as they are.
   - If the Group Access mode is selected, select a page group preset for the new channel by pressing the corresponding numeric key.



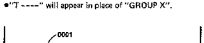
REGARDING TIMED PAGES

Pages which consist of several subpages (indicated by 1/x, 2/x, . . .) that change automatically are referred to as timed pages. To stop automatic changing of timed pages, press the HALTEN button ⑤. If many subpages are included with one master page, you may want to view only required ones. The method of specifying required subpages differs depending on the engaged page access mode.

A. Subpage setting in the Group Access mode

In the Group Access mode, one subpage can be put in memory for each of the four preset master pages. To do this, proceed as follows:

1. While viewing teletext programmes in the Group Access mode, use the DURCHLAUF button ④ to place the cursor on the number of the page which includes the subpage you wish to call up.
2. Press the ZEIT-SEITE button ⑦.
   - "T ----" will appear in place of "GROUP X".

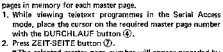


3. Enter the subpage number with 10-key input ⑧.
   - Example: "0001" for 1/x.
   - The corresponding subpage will be called up.
   - Pressing the SEITE "-" or "+" button ⑨ will change the subpage number in single increments in either direction.
   - The last selected subpage is in memory.
4. To move to another master page, use the DURCHLAUF button, and repeat steps 2 and 3 to view its subpages.
5. After one subpage has been put in memory for each master page, these can be called up by moving the cursor to the corresponding master page number with the DURCHLAUF button.
   - The memorised subpage data is retained until the page access mode is changed.
6. To cancel the Timed Page mode, press the ZEIT-SEITE button ⑦.
   - The previously engaged page access mode will resume.

B. Subpage setting in the Serial Access mode

In the Serial Access mode, it is possible to hold 4 serial subpages in memory for each master page.

1. While viewing teletext programmes in the Serial Access mode, place the cursor on the required master page number with the DURCHLAUF button ④.
2. Press ZEIT-SEITE button ⑦.
   - The selected master page number will appear preceded by a "P" in the access mode column.
   - Example: P200



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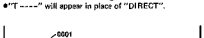
3. Enter the subpage number with 10-key input ⑧.
   - Example: 1234
   - Pressing the SEITE "-" or "+" button will change the subpage number in single increments in either direction.
   - The following three subpages will be put in memory automatically.
4. To view these pages, press the DURCHLAUF button.
5. To cancel the Timed Page mode, press the ZEIT-SEITE button.
   - The previously engaged page access mode will resume.

C. Subpage setting in the Direct Access mode

In the Direct Access mode, one subpage can be put in memory for each master page.

1. While viewing teletext programmes in the Direct Access mode, place the cursor on the required master page number with the DURCHLAUF button ④.
2. Press the ZEIT-SEITE button ⑦.
   - "T ----" will appear in place of "DIRECT".



3. Enter the subpage number with 10-key input ⑧.
   - The selected subpage will be called up.
   - To change the subpage number in single increments, press the SEITE "-" or "+" button.
   - The last selected subpage is in memory.
4. To move to another master page, use the DURCHLAUF button, and repeat steps 2 and 3 to view its subpages.

CLOSED CAPTION (SUBTITLE) BROADCAST VIEWING AND RECORDING

Closed-caption programmes can be viewed simply by selecting the page carrying captions.

1. Engage the Teletext mode and check contents for closed-caption programmes.
2. Call up the relevant page using any of the page access methods.
   - The captioned programme will appear immediately. (It is not necessary to press the MISCHEN button ⑩.)
   - By putting the VCR in the Record mode, this can also be recorded as it appears on the screen.

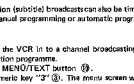
Programming for recording of closed-caption (subtitle) broadcasts

Closed-caption (subtitle) broadcasts can also be timer-recorded, either by manual programming or automatic programming.

Preparation

- First tune the VCR in to a channel broadcasting the desired closed-caption programme.

1. Press the MENÜ/TEXT button ⑨.
2. Press numeric key "2" ③. The menu screen will change to the Page Set mode. Under the page setting section you will find the indication "CAP. PAGE (TIMER REC)".



3. Press the AUFZ.NR./ANWAHL button ① until the cursor reaches the page number column to the right of "CAP. PAGE (TIMER REC)".
4. Using the numeric keys ⑧, enter the page number of a closed-caption broadcast to be timer-recorded.
5. Press either CURSOR button ⑥ to obtain the indication "ON".

Timer programming

Programme the timer following the instructions in "A. Automatic programming", or "B. Colour on-screen programming". (See pages 83 and 84.)

- The desired programme will be recorded with captions.
- Once "CAP. PAGE (TIMER REC)" is set to ON for the respective channel, all preset programmes will be recorded with captions, provided that they are broadcasts with captions on the specified page.
- Recorded captions are monochrome.

IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first . . . .

POWER AND TAPE TRANSPORT PROBLEMS

Symptoms	Check points
No power is applied to the recorder.	• Is the power cord disconnected? – Connect it.
Clock is functioning properly, but the recorder cannot be powered	• Is the TIMER indicator lit on the FDP? – Press SCHALTUHR to disengage the Timer Recording Standby mode.
Tape does not run during recording.	• Is the PAUSE/STANDB. button engaged? – Press the WIEDERGABE/X2 button.
Tape stops in the Rewind or Fast-Forward mode.	• Has the ZÄHLWERK-SPEICHER button been pressed? – Press it so [S] no longer appears on the FDP.
Tape will not rewind or fast forward.	• Is the tape already fully rewound or fast forwarded? – Check the cassette.

RECORDING PROBLEMS

Symptoms	Check points
Recording cannot be started.	• Is a cassette loaded? • Is the safety tab on the cassette removed? – Reseal the slot with cellophane tape.
Camera recording is not possible.	• Are the camera and the camera adapter correctly connected? • Is the power switch of the camera adapter set to ON? • Does the channel display indicate "AUF"? – Press "0/AV".
Simulcast recording is not possible.	• Has the SIMUL button been pressed? – Press it so "SIM" appears on the FDP. • Is an audio source correctly connected to the AUDIO EING. connectors? – Check connections.
Timer recording is not possible.	• Have you set the clock correctly and programmed the timer correctly? – Check once again. • Is the TIMER indicator lit on the FDP? – Press SCHALTUHR.

PLAYBACK PROBLEMS

Symptoms	Check points
Playback picture does not appear while the tape is running.	• Is the TV receiver set to the correct mode? See pages 59 and 60.
Noise appears during playback.	• Press SPURLAGE buttons. (See page 75.)
Playback picture is blurred or interrupted while TV broadcasts are clear.	• Video heads may be dirty. – Head cleaning is necessary. Consult your JVC dealer.

CONTINUED ON NEXT PAGE . . .

ENGLISH
ENGLISH

HI-FI AUDIO PROBLEMS

Symptoms	Check points
TV sound cannot be recorded on hi-fi audio track.	• Has the SIMUL button been pressed? – Press it again so "SIM" no longer appears on the FDP.
Breaks are noticeable in hi-fi audio reproduction.	• Press the SPURLAGE buttons. (See pages 71 and 75.) • Have you adjusted the recording level correctly? – Over-level recordings could be a cause. Adjust the level correctly next time. (See page 71.)
Soundtrack on the hi-fi audio track cannot be reproduced.	• Is the NORM indicator on the FDP lit? – Press the AUDIO MIX button for L and R to light as required.
Audio level indicators do not function.	• Is the PEGELANZEIGE switch set to a position other than EIN? – Set it to EIN.

OTHERS

Symptoms	Check points
Whistling or howling is heard from TV.	• Move camera or microphone away from TV or reduce TV sound volume.
Some channels are skipped over when selecting a channel.	• Those channels are preset to be skipped over. If you need them, restore them. (See page 66.)
Channel cannot be switched.	• Is recording in progress? – Press PAUSE/STANDB., select a desired channel and press WIEDERGABE/X2.
The recorder cannot be operated with the remote control.	• Is the A/B-CODE indicator showing the proper code for the recorder being operated? – Press the A/B-CODE button to switch the remote control to the correct setting.
The recorded teletext and subtitle characters are black-and-white.	• This is normal.

This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

HEAD CLEANING

•Picture playback may become blurred or interrupted while the TV programme received is clear. This does not mean that the recorded programme has been erased.
•Dirt accumulated on the video heads after long periods of use causes such problems. In this case, head cleaning requiring highly technical care is necessary.

For head cleaning, consult the your JVC dealer.

SECTION 1
DISASSEMBLY AND MECHANISM ADJUSTMENTS

1.1 DISASSEMBLY

1.1.1 External covers

1. TOP cover
1) Take out four screws Ⓐ from the side panel (L) and side panel (R) and remove them.
2) Take out one screw Ⓑ and tilt up the rear end of the top cover in direction ①, then remove the top cover.

2. Front panel
1) Remove the top cover.
2) Take out two screws Ⓔ from the bottom of the set then remove two feet.
3) Carefully bend three hooks Ⓒ of the front panel assembly from the upper side of the chassis in order to disengage the hooks from the chassis.
4) Pull the front panel assembly toward direction ② to disengage three hooks Ⓓ of the front panel assembly from the bottom of the chassis, then remove the front panel assembly.

3. Bottom cover
1) Remove the top cover.
2) Take out ten screws Ⓕ from the bottom of the set, then remove the shield plate (R), (L) and bottom cover.

4. Cassette housing assembly
1) Remove the front panel assembly.
2) Take out two screws Ⓖ and one screw Ⓛ from the video board assembly.
3) Take out two screws Ⓗ from the mechanism base.
4) Pull the cassette housing assembly toward front to disengage the two claws Ⓙ.
5) Carefully tilt up the cassette housing assembly in direction ③ and disconnect connector Ⓚ, then remove the cassette housing assembly.

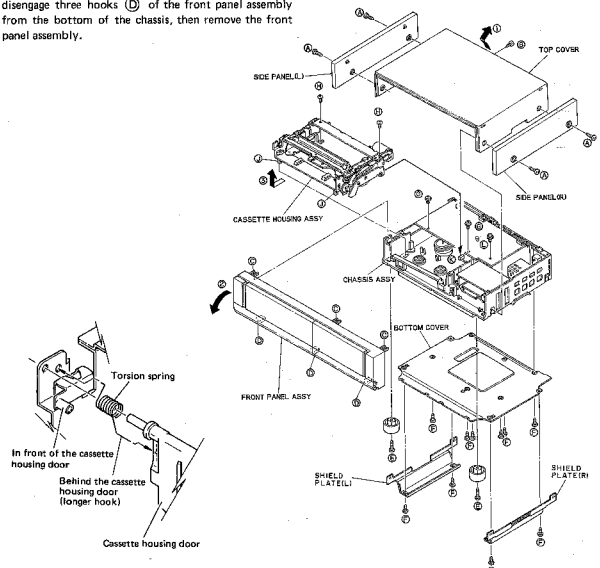


Fig. 1-1-1

1.1.2 Circuit boards (See Fig. 1-1-2)

1. Video and Terminal board assemblies.
1) Take out three screws Ⓛ and one screw Ⓜ, then raise the video and Terminal board assemblies to remove them.

2. Tuner CTL and IF board assemblies
1) Take out two screws Ⓝ and remove the Tuner CTL and IF board assemblies.

3. Flying Erase board assembly
1) Take out one screw Ⓟ and remove the shield plate assembly (1).
2) Raise the Flying Erase board assembly to remove it.

4. Mechacon, AV IN/OUT and Servo board assemblies.
1) Take out three screws Ⓠ, then remove the Mechacon, AV IN/OUT and Servo board assemblies.

Note: *Servo and AV IN/OUT board assemblies are connected to the Mechacon board assembly.*

5. Servo Sub board assembly
1) Take out one screw Ⓡ and remove the bracket.
2) Raise the Servo Sub board assembly to remove it.

6. Audio board assembly
1) Take out two screws Ⓢ and remove the Audio board assembly and shield plate assembly (2).

7. Timer board assembly
1) Take out two screws Ⓣ and remove the Timer board assembly.

8. Switching Power Supply and Regulator board assemblies.
1) Take out three screws Ⓤ and remove the Switching Power Supply and Regulator board assemblies.

9. Demodulator board assembly
1) Take out two screws Ⓦ and remove the Demodulator board assembly.

10. Auto Tracking board assembly
1) Pull the Auto Tracking board assembly toward front to remove it.

11. DECORDER/VPT
1) Take out seven screws Ⓥ and remove the DECORDER /VPT board assembly.

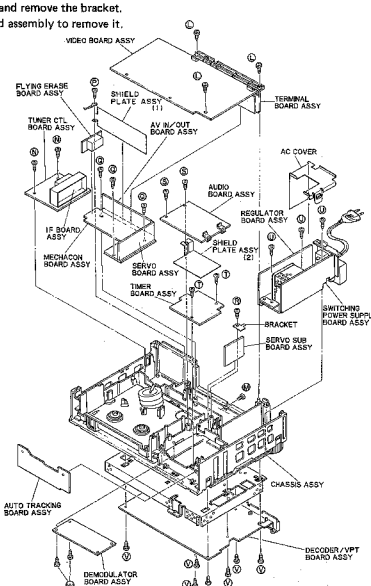


Fig. 1-1-2

1.1.3 Disconnecting the flat wire

In addition to the normally employed cap housing, in some applications, special types are used for such purposes as flat wire connection. This type is mainly used on the deck terminal board.
Among the special type housings are the PU58798 and PU59933 series. These clamp the ends of the cable wires.
See Fig. 1-1-3, -4 for methods of connecting and disconnecting the cables.

1. PU58798 series
   Pull the connector structure upward to release the clamp when removing or inserting the flat wire cable.

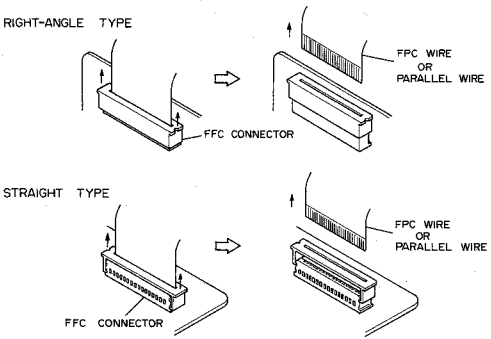


Fig. 1-1-3

2. PU59933 series
   With this type, release the clamp by pressing downward with the end of a flat blade screwdriver, as indicated below.

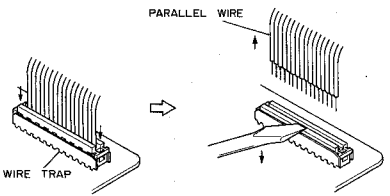


Fig. 1-1-4

Note: *Wire removal method is the same for sets using the new lock type housing in the future. Either press or pull the housing to remove.*

1.2 MECHANISM ADJUSTMENT

1.2.1 Precautions

1. Disconnect mainframe from AC power before soldering.
2. Avoid imparting stress to wires when disengaging connectors.
3. Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4. Use care not to damage tabs, claws, etc. during repairs.
5. Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.

1.2.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1. Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2. Connect pins 1 and 4 of MECHACON board connector CN2.
3. Connect VCR to AC power.
4. The loading arms move. The Stop mode is produced at loading end and power is cut off.
5. Again press the power button.
6. Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

1.2.3 Manually removing cassette tape

In event of electrical system failure that prevents the tape from being unloaded, the tape can be removed manually by the following procedure. Refer to Figs. 1-3-1, 1-3-2 and 1-3-3.

1. Disconnect VCR from AC outlet.
2. Turn the mode motor pulley (from the bottom of the deck) by hand toward the drum motor assy.
3. Turn the mode motor pulley so that the control cam rotates clockwise. This retracts the pole base assembly to the unloading position.
4. Turn the take-up reel disk (from the bottom of the deck) to absorb slack tape within the cassette.
5. Again turn the mode motor in the same direction to stop rotation of control cam.
6. Turn the cassette motor counterclockwise to raise the cassette and remove it.

1.2.4 Test equipment

The following special tools and fixtures are required for mechanism adjustment.

1. Alignment tapes : MH-2 and MH-2L
   Stairstep signal is employed for interchangeability checks and adjustments.
2. Torque gauge : PUJ48075-2
   Measures tape take-up torque.
3. Back tension cassette gauge : PUJ48076-2
   Measures tape tension at the supply side.
4. A/C head positioning tool : PUJ47351-2
   Shifts the head base for adjusting the control head position.

Alignment tapes 1	Torque gauge 2	Back tension cassette gauge 3	A/C head positioning tool 4

Fig. 1-2-1 Test equipment

1.3 MAIN MECHANISM PARTS

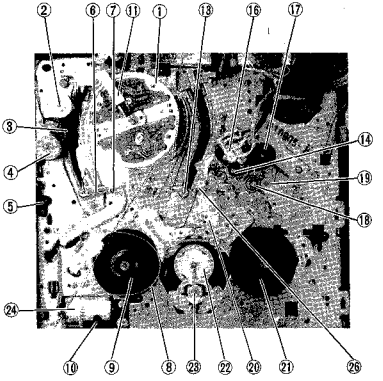


Fig. 1-3-1 Top view of main-deck

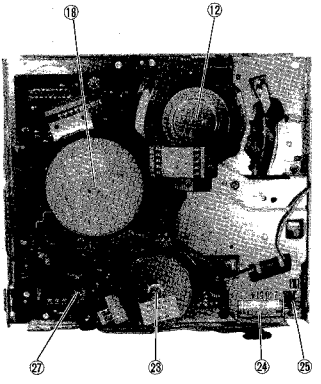


Fig. 1-3-2 Bottom view of main-deck

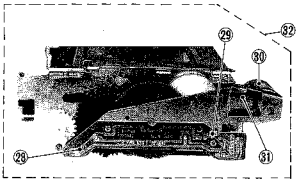


Fig. 1-3-3 Cassette housing

A. Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Heavy contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
  Do not use a vertical stroke, as this may damage the heads.

B. Lubrication

Oil and grease do not require periodic replenishing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).

1. Table 1-3-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part Name	Part number
Oil	Video Oil	COSMO-HV56
Grease	Video Grease (Black)	MOS2-C
	" (Ivory)	DAPHNE-XLA-2

Table 1-3-1

2. Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: *Stir grease that has been stored for an extended period.*

C. Main mechanical parts

See Fig. 1-3-1, 1-3-2 and 1-3-3.

No.	Parts No./Symbol No.	Parts Name
1	PDM2119A/(M3-2A)	Upper drum assy
2	PQ43298A/(M4-110)	Roller assy
3	PU60646/(M4-5)	Full erase head
4	PQ41955/(M4-9)	Impedance roller
5	PN268R-NC/(54-Q1)	End sensor
6	PU60556-1-2/(M4-23)	Supply pole base assy
7	PQ43710A/(M4-1)	Tension arm assy
8	PQ41948A/(M4-3)	Tension band
9	PU59250-1-2/(M4-42)	Supply reel disk
10	PU58644-1-3/(53-S1)	Rec safety siwtch
11	PDM4015B/(M3-2D)	Brush
12	PDM2113C/(M3-2C)	Lower drum assy
13	PU60557-1-4/(M4-22)	Take-up pole base assy
14	PU53629-3/(M4-25)	Tape guide
15	–	–
16	PU60560-2/(M4-15)	Audio/control head
17	PQ420068/(M4-68)	Pinch roller arm assy
18	PU60201V/(M4-29)	Capstan motor
19	PQ420138-4/(M4-72)	Guide arm assy
20	PU59925-1-1/(M4-82)	LED holder
21	PU58638-1-2/(M4-43)	Take-up reel disk
22	PU58645-1-4/(M4-32)	Idler arm
23	PU59926V/(M4-39)	Reel motor
24	PQ41996B/(M4-51)	Mode motor assy
25	PQM30003-20/(M4-58)	Mode motor belt
26	PQ42979A-2/(M4-89)	Half loading arm assy
27	PU60444/(M4-85)	Slide encorder
28	PU58879/(56-PHS1)	Cassette sensor
29	PN268R-NC/(56-Q1)	Start sensor
30	PQ42385A/(M3-7A)	Cassette motor assy
31	PQM30003-19/(M3-7C)	Cassette motor belt
32	PUS28277H/(M3-7)	Cassette housing assy

- Symbol interpretation example

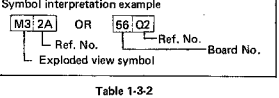


Table 1-3-2

1.4 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at regular intervals.

1.4.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.

Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Symbol No.	Periodic servicing schedule (operation hours)								
			250	500	750	1000	1250	1500	1750	2000	3000
Tape Transport	Upper drum	M3-2A	★	★	☆	●	★	★	☆	●	●
	Audio/control head	M4-15	★	★	★	★	★	★	★	☆	●
	Pinch roller	M4-68	★	★	★	★	★	★	★	★	●
	Full erase head	M4-5	★	★	★	★	★	★	★	★	●
	Tension arm	M4-1									
	Lower drum	M3-2C									
	Capstan (shaft)	M4-29									
	Half loading arm	M4-89									
	Guide arm	M4-72									
	Tape guide	M4-25	★	★	★	★	★	★	★	★	★
	Supply slant pole	M4-23									
	Take-up slant pole	M4-22									
	Impedance roller	M4-9									
	Roller assy	M4-110									
Drive	Capstan motor	M4-29								●	
	Reel motor	M4-39								●	
	Cassette motor	M3-7A									●
	Mode motor	M4-51									●
	Supply reel disk	M4-42				△				△	●
	Take-up reel disk	M4-43				△				△	●
	Idler arm	M4-32				○				●	
	Cassette belt	M3-7C				○				●	
	Mode motor belt	M4-58				○				●	
Others	Brush	M3-2D				○				○	○
	Tension band	M4-3				○				○	○

★ : Cleaning
☆ : Cleaning (or Replacement if necessary)
△ : Lubrication
No: Refer to Main mechanical parts

▲ : Lubrication (or Replacement if necessary)
● : Replacement
○ : Inspection (or Replacement if necessary)

Table 1-3-3 Approximate maintenance schedule

1.5 MAIN ASSEMBLY REPLACEMENT

No.	Item	Adjustment parts	Operating mode	Description
1	Upper drum assembly – Removal –			**Note:** *When installing the new upper durm, use care not to touch the video heads. If heads are soiled, clean with a soft, finely woven cotton cloth or chamois that has been moistened in alcohol. Hold lightly against the heads and turn the drum clockwise. By no means clean with a vertical stroke.* 1) Refer to Fig. 1-5-1. Take out screw (1) and remove the brush assembly. 2) Use a desoldering tool or desoldering braid to unsolder the upper drum boards. 3) Take out two screws (2) and raise the upper drum to remove it together with the upper drum board. (If this drum is to be reinstalled, use care not to touch or damage the heads.)
	– Installation –			1) Refer to Fig. 1-5-1. Align the black relay pin of the new upper drum with the white marking of the lower drum. 2) Reinsert screws (2) and tighten them in a balanced manner. 3) Reinstall and solder the upper drum boards. 4) Clean the drum assemblies (see above note). 5) Reinstall the brush assembly and secure with screw (1).
	– Checks and adjustments –			After installing the upper drum, perform the following checks and adjustments (refer to appropriate Sections of this Manual). 1) FM waveform 2) Servo circuit 3) Video circuit 4) FM audio circuit

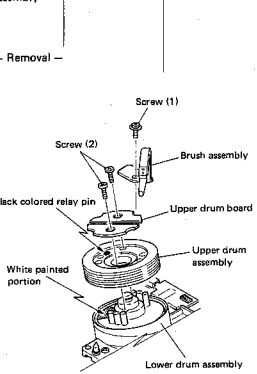
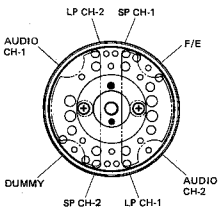


Fig. 1-5-1 Upper drum assembly



No.	Item	Adjustment parts	Operating mode	Description
2	A/C head (Audio/Control head)			
	– Removal –			1) Disengage connectors attached to the A/C head board. 2) Take out two screws (1) and remove the A/C head together with the head base. 3) Unsolder and remove the A/C head board from the A/C head. 4) Take out three screws (3) and remove the A/C head from the head base. Use care regarding the three springs.
	– Installation –			1) Install the A/C head by reversing the removal steps of above. 2) Temporarily set the A/C head height above the head base for 6.6 mm (see Fig. 1-5-3).
	– Checks and adjustments –			1) Use a spare tape (not Alignment tape) and confirm proper operation of the tape transport (see Section 1.8). 2) Perform interchangeability adjustment (see Section 1.9).

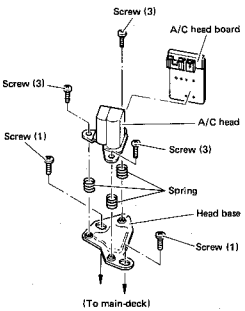


Fig. 1-5-2 A/C head

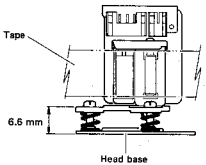
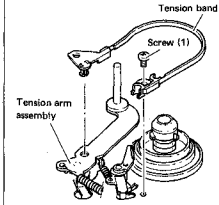
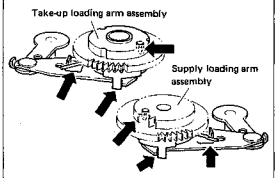
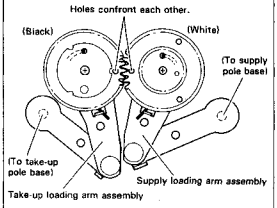


Fig. 1-5-3 A/C head height

No.	Item	Adjustment parts	Operating mode	Description
3	Tension band assembly  Fig. 1-5-4 Tension band assembly			1) Take out screw (1) and disengage the tension band assembly from the tension arm assembly (see Fig. 1-5-4). 2) Remove and replace the tension band assembly. 3) Perform tension pole position adjustment (see Section 1.7).

1.6 ASSEMBLY PROCEDURE OF MECHANISM

No.	Item	Adjustment parts	Operating mode	Description
	A close relationship exists between the mode select switch and the mechacon circuit. Therefore, the mode select switch and control arm engagement determines the overall mechanical operations of the levers, gears, rollers, etc. If these parts are not properly positioned, the video deck becomes stalled in the unloading or Stop mode.			
1	Loading arm assemblies  Fig. 1-6-1 Loading arm assembly (1)			These assemblies are comprised of loading gears, torsion springs and loading arms. 1) Refer to Fig. 1-6-1 and install the loading arm assemblies correctly.
	 Fig. 1-6-2 Loading arm assembly (2)			2) The take-up and supply loading arm positions with respect to the loading gear holes are indicated in Fig. 1-6-2. This configuration is important to allow shifting to the next operation.

No.	Item	Adjustment parts	Operating mode	Description
2	Control cam			1) Install the half loading cam on the cam bracket assembly, then mount the slide cam plate assembly so that its stud sets into the groove on the half loading cam. 2) Install the arm gear assembly on the cam bracket assembly. 3) Assemble the second gear and the control cam so that the stud of the control cam sets into the hole of the second gear. 4) Mount the above assembly (control cam and second gear) on the cam bracket assembly to satisfy the relation indicated in figure. 5) Do not turn the control cam from this position for the next step.
3	Cam bracket assembly			1) Refer to Fig. 1-6-4 and press the plate assembly toward the right to overlap the indicated hole with that of the main deck. 2) Then install the cam bracket assembly. Note: *If the arm and loading gears do not mesh properly, use a jeweler's screwdriver or similar tool to engage the gear teeth while installing the cam bracket assembly.*
4	Mode switch position			1) Engage the plate assembly and mode switch as shown in Fig. 1-6-5. Partially tighten screw (1) to where the switch can still be shifted for adjusting the position. 2) Press the plate assembly toward the right to where the holes are overlapped as in Fig. 1-6-4. Insert a jeweler's screwdriver into the holes to keep them aligned. 3) Shift the mode switch to align the V-notch as indicated in Fig. 1-6-5. Then tighten screw (1) to secure. 4) Remove the jeweler's screwdriver, then reinstall and solder the circuit board.

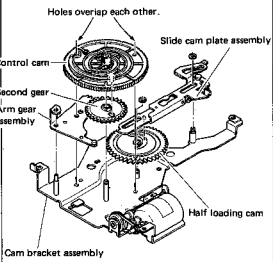


Fig. 1-6-3 Control cam

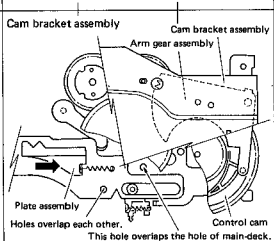


Fig. 1-6-4 Cam bracket assembly

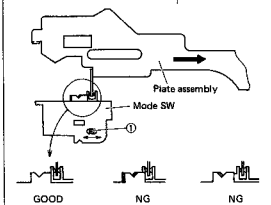


Fig. 1-6-5 Mode switch

1.7 CONFIRMATION AND ADJUSTMENT

No.	Item	Adjustment parts	Operating mode	Description
1	Tension pole position			1) Without a cassette tape, set for the Play mode (see Section 1.2). 2) Refer to Fig. 1-7-1. Slightly loosen screw (1). Adjust the tension band holder position for 0 mm separation between A and B. 3) Tighten screw (1) to secure the tension band holder. 4) Use the back tension cassette gauge and set for the Play mode. 5) Check for a scale reading between 25 and 45. 6) If outside this range, clean the tension band contacting portions of the supply reel disk with alcohol, or check the condition of the tension arm spring. If necessary, replace the tension band assembly.
2	Take-up torque			1) Without a cassette tape, set for the Play mode (see Section 1.2). 2) Set the torque gauge on the take-up reel disk. 3) Grasp the torque gauge lightly so that it rotates and read the value when the scale matches the indicator needle. Confirm a value between 45 and 155. 4) If outside this range, clean the rubber portion of the idler arm with alcohol, or if necessary, check the reel motor drive circuit.

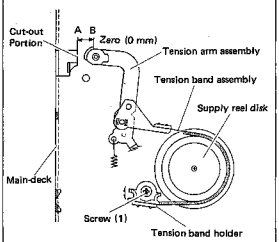


Fig. 1-7-1 Tension pole position

1.8 TAPE TRANSPORT CHECKS AND ADJUSTMENT PREPARATIONS

No.	Item	Adjustment parts	Operating mode	Description
	The tape transport system has been precision-adjusted at the factory and ordinarily does not require readjustment. However, adjustment may become necessary after long term usage or after replacing parts that affect the tape transport. The following steps mainly cover preparations for the interchangeability adjustments of Section 1.9.			
1	Guide roller			1) During interchangeability adjustments, the guide roller is turned with a flat-blade screwdriver to adjust its height and correct FM waveform linearity. Use a metric hex key (1.25 mm) to slightly loosen the setscrew at the base of the guide roller (see Fig. 1-8-1). Loosen the setscrew just sufficiently to allow the guide roller to be turned. If too loose, tape transport will be too unstable to permit correct adjustment.
2	Impedance roller			1) This compensates for tape running stability between the cassette and head drum. After adjusting the supply guide roller, the impedance roller height is adjusted for smooth tape transport at the lower flange. 2) Use a metric nutdriver (5.5 mm) to adjust by turning the upper nut (see Fig. 1-8-2). However, note that excess turning can disturb the FM waveform stability.
3	A/C head (audio/control head)			1) After adjusting the take-up guide roller, adjust the A/C head inclination for smooth tape travel at the lower flange of the take-up guide pole. Refer to Fig. 1-8-3.

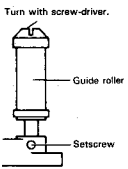


Fig. 1-8-1 Guide roller

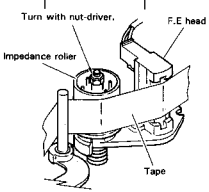


Fig. 1-8-2 Impedance roller

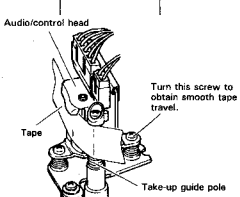
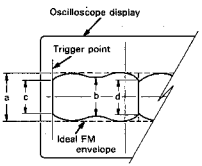
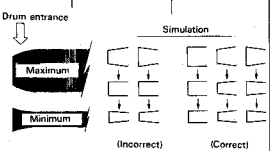
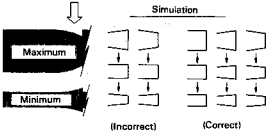
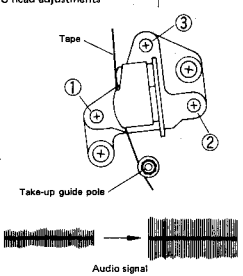
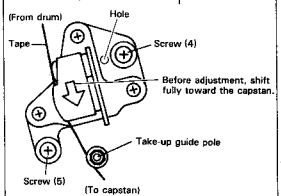


Fig. 1-8-3 A/C head

1.9 INTERCHANGEABILITY CHECKS AND ADJUSTMENTS

No.	Item	Adjustment parts	Operating mode	Description
	Before using costly Alignment tape, use a spare tape and confirm correct operation of the tape transport. If this adjustment is perform, after turning off the indicator by pressing the + and – tracking buttons simultaneously, perform interchangeability adjustment.			
1	FM waveform $\frac{b}{a} \geqq 0.7$, $\frac{c}{a} \geqq 0.5$ and $\frac{d}{a} \geqq 0.5$  Fig. 1-9-1 FM envelope  Fig. 1-9-2 Drum entrance  Fig. 1-9-3 Drum exit			1) Connect oscilloscope to the FM OUT testpoint of the video playback circuit. Trigger the oscilloscope externally with the signal from the drum flipflop (D-FF or FF) testpoint. Set the trigger slope to minus (–). 2) Play the MH-2 Alignment tape and adjust the tracking for maximum FM waveform output. Refer to Fig. 1-9-1. Confirm the relationships indicated in the figure for maximum output (a), minimum center output (b), minimum output at the drum intake (c) and minimum output at the drum output (d). 3) Adjustment is required if the above specifications are not fulfilled. Even when these are fulfilled, check that the FM waveform varies linearly overall. If not, slight deviation in tracking will cause a large proportional level drop to result in noise appearing in the picture. Therefore, in this condition, proceed to the following checks and perform adjustments where necessary. 4) Operate the tracking adjustment between minimum and maximum outputs of the FM waveform. Observe the portion of the waveform corresponding to the drum intake (see Fig. 1-9-2). As the tracking is adjusted, although the gain may increase or decrease, the geometric shape of this part of the waveform should remain consistent. If the shape varies, as shown by the incorrect examples in the figure, carefully perform adjustment of the supply guide roller height. 5) Next observe the portion of the waveform corresponding to the drum output (see Fig. 1-9-3), while operating the tracking adjustment. This should also vary only in gain, but not in shape. If the shape varies, as shown by the incorrect examples in the figure, carefully perform adjustment of the take-up guide roller height. 6) Check the overall FM waveform. Fine-adjust both guide rollers so that variation is as minimum and linear as possible. 7) Observe the tape travel at the guide rollers and guide poles. Confirm absence of tape creasing or curling. Confirm that the tape properly rides at the lower flange of the supply guide pole. Carefully adjust the guide pole height if necessary. This adjustment is important and affects FM waveform response. If creasing or curling is observed at the take-up guide pole, carefully adjust the audio/control head inclination so that the tape rides properly at the lower flange of the guide pole. Finally, again check the FM waveform.

No.	Item	Adjustment parts	Operating mode	Description
	Proper adjustment of the A/C head position is important for ensuring adequate audio output and S/N. Severe misalignment can prevent control signal pick-up and cause servo instability. Precise adjustment is particularly important for models that include tape indexing and addressing features, since these rely on control signal coding for operation. To observe the audio signal, connect an oscilloscope to the test point (AUDIO OUT) of the audio circuit, or directly to the audio output terminal. In some cases, monitoring the sound with headphones may be helpful.			
2	A/C head adjustments  Fig. 1-9-4 A/C head			1) Play the stairstep (audio 6 kHz) portion of the MH-2 Alignment tape. 2) Adjust screw (3) (Fig. 1-9-4), which is the azimuth adjustment, for maximum output. 3) Turn screws (1), (2) and (3) by small and equal increments (about 45° at a time) to adjust the A/C head height for maximum audio output. Slightly raise and lower the height to confirm the maximum output position. 4) Observe the FM waveform and tighten the guide roller setscrews. Use care not to disturb the height adjustments. Then again confirm the FM waveform.
	This determines the distance between the sound and picture information on the tape. Correct adjustment is important for providing synchronization of picture and sound in the program. Incorrect adjustment is particularly noticeable in the slow speed (LP) mode. Observe the FM waveform by connecting an oscilloscope to the video play-back circuit test point (FM OUT). Trigger the oscilloscope externally with the drum flipflop signal. Use plus (–) trigger to view the CH1 waveform. Set the tracking adjustment to the neutral (AUTO) position. (Turn off the indicator by pressing the + and – tracking buttons simultaneously)			
3	Control head phase (X value)  Fig. 1-9-5 Control head phase			1) Play the stairstep portion of the MH-2 Alignment tape. 2) See Fig. 1-9-5. Slightly loosen screws (4) and (5). Set the A/C head positioning tool over screw (4) with the pin of the tool inserted into the indicated hole. 3) Turn the tool counterclockwise to shift the A/C head fully toward the capstan direction. 4) While observing the CH-1 FM waveform, gradually turn the tool clockwise. Stop at the peak output position and tighten screw (5). Remove the tool and tighten screw (4). 5) Replace alignment tape MH-2L with MH-2, play back the stairstep segment of the alignment tape MH-2L. 6) Operate the tracking adjustment and confirm that the maximum FM waveform is obtained at the neutral setting. 7) If the FM output peak is not obtained at tracking neutral position, shift the A/C head at the FM output peak nearest to this position.

No.	Item	Adjustment parts	Operating mode	Description
4	Final checks			1) Supply a video or TV signal (monochrome is preferable). Use a spare tape and record and play back. Confirm that the play-back FM signal conforms to the parameters indicated in Fig. 1-9-1. Check for both SP and LP modes. 2) Connect the oscilloscope to the test point (FM OUT) of the FM audio play-back circuit. Play the stairstep portion (which includes the FM audio carrier) of the MH-2L Alignment tape. Confirm absence of severe drop in FM waveform level. 3) Perform the checks and, if necessary adjustments, of the Electrical Adjustments Section for the servo, video and audio (and FM audio) circuits.

SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 PREPARATION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

2.1.1 Required test equipment

1. Color television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Vectorscope
5. Audio oscillator
6. Audio voltmeter
7. Digital voltmeter
8. Signal generator: RF/IF sweep/marker
9. Signal generator: PAL color bar, stairstep, video sweeper
10. Signal generator: Audio multiplex TV signal generator
11. Recording tape
12. Alignment tape: MH-2, MH-2H
13. RCA-S adapter: PTU93001A
14. Patch cord: PTU94001
    (PRE/REC board to CONNECTOR board)
15. Extension cable: PTU93004A
    (AV IN/OUT board to MECHACON board
    SERVO board to MECHACON board)
16. Head resonance adjust coil : PTU94004A
17. Head resonance adjust fixture : PTU94006A

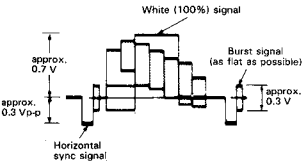


Fig. 2-1-1 Color bar signal of pattern generator

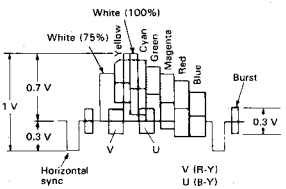


Fig. 2-1-2 Color bar signal waveform

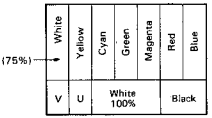


Fig. 2-1-3 Color bar pattern

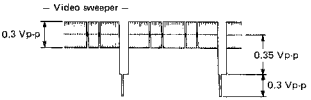


Fig. 2-1-4 Input signal level for video sweeper

2.1.2 Check and adjustment steps

The check and adjustment steps are provided in the following in the form of charts. For clarity, the nomenclature used in the charts is outlined below.

No.	Checks and adjustments are numbered in the recommended sequence in which they are to be performed.
Item	Name assigned to the particular check and adjustment step.
Check Point	Location to which measuring instrument (oscilloscope unless otherwise noted) is to be connected.
Adjustment Parts	Variable component (resistor, capacitor, etc.) to be adjusted in this step. Dash (–) indicates check only.
Signal & Mode	• Input signal required to perform adjustment. Dash (–) indicates that special signal is not required. • Equipment operating mode at time of check or adjustment.
Color bars	Color bars signal as video input.
Stairstep	Stairstep signal as video input.
1 kHz	1 kHz sinewave as audio input signal.
MH-2 color bars	Color bars segment of MH-2 alignment tape.
MH-2 stairstep	Stairstep segment of MH-2 alignment tape.
MH-2 1 kHz	1 kHz audio signal segment of MH-2 alignment tape.
MH-2 RF sweep	RF sweep segment of MH-2 alignment tape.
MH-2L color bars	Color bars segment of MH-2L alignment tape.
MH-2L stairstep	Stairstep segment of MH-2L alignment tape.
MH-2L RF sweep	RF sweep segment of MH-2L alignment tape.
MH-2H color bars	Color bars segment of MH-2H alignment tape.
MH-F2 stairstep	Stairstep segment of MH-F2 alignment tape.
MH-F2 1 kHz	1 kHz FM audio signal segment of MH-F2 alignment tape.
E-E	Power on and machine in Stop mode.
REC	Recording mode
PB	Playback mode
SEARCH	Search (FWDS and REVS) playback mode
SLOW	Slow motion playback mode
STILL	Pause during playback mode
A DUB	Audio dubbing mode
SP mode	SP recording speed
EP mode	EP recording speed
LP mode	LP recording speed
S-VHS mode	Super-VHS recording mode
VHS mode	VHS recording mode
Description	This column provides an explanation of the step, notes and adjustment values.

2.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise noted, all test points and adjustments are located on the SWITCHING REGULATOR board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	5 V DC output voltage	TP1	R26 (SWD 5V)	• REC • TUNER	1) Connect a digital voltmeter between TP1 and TP-GND. 2) Record in the TUNER mode, and adjust R26 for 5.345 ± 0.05 V.
2	Semi-REG 15 V output voltage	CN3 pin 10	R9 (SEMI REG 15V)	• REC • TUNER	1) Connect a digital voltmeter between CN3 pin 10 and TP-GND. 2) Record in the TUNER mode, and adjust R9 for 15.2 ± 0.2 V.

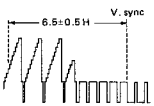
2.3 TIMER CIRCUIT

Note: *Unless otherwise noted, all test points and adjustments are located on the TIMER board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Timer clock	TP2 TP1 (GND)	C10	• E-E	1) Connect a frequency counter between TP2 and GND. 2) Short between TP3 (TEST) and GND, then short the leads of electrolytic capacitor C8 once in order to reset IC1. 3) Adjust C10 for 2048.000 ± 0.002 Hz (488.2808 to 488.2818 μs).

2.4 SERVO CIRCUIT

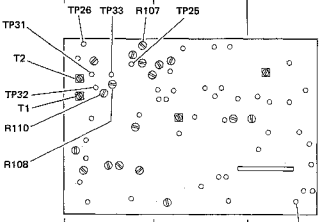
Note: *Unless otherwise noted, all test points and adjustments are located on the SERVO board.*

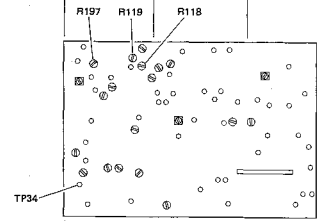
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	SP PB switching point	TP10 (VIDEO board)	R32 (SW POINT)	• PB • MH-2 (stairstep) • Trigger slope (–) • SP mode 	1) Connect an oscilloscope to TP10 of the VIDEO board. 2) Play back the stairstep segment of MH-2 alignment tape. 3) Trigger the oscilloscope externally (– slope) with the signal from TP11 of the VIDEO board. 4) Adjust R32 to position the trigger point 6.5 ± 0.5 H from V. sync.
2	SP slow tracking preset	Monitor	R55 (SP SLOW)	• REC ↓ • Slow PB (1/6) • SP	1) Set the TRACKING control of the FRONT to the preset position by simultaneously pressing the + and – TRACKING buttons. 2) Record a color bar signal in the SP mode, then play back in the Slow mode. 3) Adjust R55 to minimize noise bars on the video monitor screen.
	LP slow tracking preset	Monitor	R59 (LP SLOW)	• REC ↓ • Slow PB (1/6) • LP	4) In the same manner, adjust R59 for the LP mode.
3	SP X2 normal tracking preset	Monitor	R38 (SP X2)	• SP • REC ↓ • X2 Play	1) Set the TRACKING control of the FRONT panel to the preset position by simultaneously pressing the + and – TRACKING buttons. 2) Record a color bar signal in the SP mode, then play back in the 2X Play mode. 3) Adjust R38 to minimize noise bars on the video monitor screen.
	EP X2 normal tracking preset	Monitor	R36 (LP X2)	• LP • REC ↓ • X2 Play	4) In the same manner, adjust R36 for the LP mode.
4	V. pulse position	Monitor	R11 (V. LOCK) (REAR panel)	• REC then PB ↓ • STILL • SP • Color bar	1) Record the color bar signal, then play back. 2) In the Still mode, observe the monitor and adjust R11 (REAR panel) for the minimum vertical jitter.

2.5 VIDEO CIRCUIT

Note: *Unless otherwise noted, all test points and adjustments are located on the VIDEO board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Y comb level	TP25 TP26	R107	• S-VHS mode • SP • E-E • Color bar	1) Connect one channel of a dual trace oscilloscope to TP25 and the other channel to TP26. 2) Adjust R107 so that TP25 and TP26 become the same level.
2	2H delayed chroma	TP31 TP32	R110 T2	• S-VHS mode • SP • E-E • Color bar	1) Connect CH-1 of a dual trace oscilloscope to TP31 and CH-2 to TP32. 2) Set VOLT/DIV controls of both channels to the same range (e.g., 50 mV). 3) Invert CH-2 and use ADD mode. 4) Alternately adjust R110 and T2 for minimum level.
3	4H delayed chroma	TP31 TP33	R108 T1	• S-VHS mode • SP • E-E • Color bar	1) In the same manner, adjust R108 and T1 for minimum level.
4	Y-comb	TP34	R119 R118 R197	• VHS mode • SP • E-E • Color bar	1) Connect an oscilloscope to TP34. 2) Adjust R118, R119 and R197 alternately for minimum chromatic level (less than 40 mVp-p of the magenta portion).





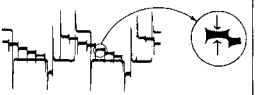
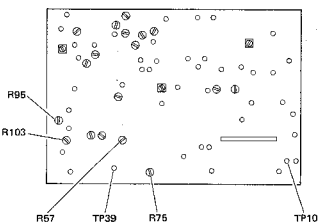


Fig. 2-5-1

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
5	E-E level	TP10	R75	• S-VHS mode • SP • E-E • Color bar	1) Connect an oscilloscope to TP10. 2) Adjust R75 for 0.97 ± 0.03 Vp-p (with 75 Ω load).
6	Sub emph. input level	TP39	R57	• S-VHS mode • SP • E-E • Color bar	1) Connect an oscilloscope to TP39. 2) Adjust R57 for 400 ± 20 mVp-p siganl level in the SP mode. 400mVp-p ± 20mVp-p Fig. 2-5-2
7	S-VHS mode REC FM level	TP3 (PRE/REC)	R103 (S-MODE REC FM)	• S-VHS mode • LP mode • REC • Color bar	Note: *Connect an oscilloscope's GND terminal to TP-GND near the shield case of the PRE/REC board.* 1) Connect an oscilloscope to TP3 of the PRE/REC board and record a color bar signal in the LP mode. 2) Adjust R103 for 3.0 ± 0.2 Vp-p pedestal level, between centers of the waveform outline at the pedestal portion. 3.0 Vp-p Fig. 2-5-3
8	VHS mode REC FM level	TP3 (PRE/REC)	R95 (VHS REC FM)	• VHS mode • LP mode • REC • Color bar	1) In the same manner as above (2.5.7), adjust R95 for 2.0 ± 0.1 Vp-p pedestal level.



No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
9	SP REC color level and balance	TP307	R355 (SP REC COLOR)	• S-VHS mode • PB mode • MH-2H color bars • SP mode • AUTO TRACKING OFF • REC then PB • Color bars • SP mode • AUTO TRACKING OFF	**Note:** ***Use larger-level waveform for adjustment.*** 1) Connect an oscilloscope to TP307. Play back the color bar segment of the MH-2H and observe color signal level. 2) Adjust by pressing the + and – TRACKING buttons of the FRONT panel for maximum level of the color waveform and make a note of the higher color level "A". 3) Set the TRACKING control of the FRONT panel to the preset position by simultaneously pressing the + and – TRACKING buttons. 4) Record and play back the color bar signal. If necessary, before recording, adjust R355 so that the higher level channel becomes 110% of the noted level "A" during playback. At this time, confirm that the channel difference is within 3 dB. Fig. 2-5-4
10	LP REC color level and balance	TP307	R353 (LP REC COLOR)	• S-VHS mode • PB mode • LP mode • MH-2H color bar • AUTO TRACKING OFF • REC then PB • Color bar • LP mode • AUTO TRACKING OFF	**Note:** ***Perform the LP mode adjustment after completing that for the SP mode.*** 1) Connect an oscilloscope to TP307. Play back the color bar segment of the MH-2H and observe color signal level. 2) Adjust by pressing the + and – TRACKING buttons of the FRONT panel for maximum level of the color waveform and make a note of the higher color level "A". 3) Set the TRACKING control of the FRONT panel to the preset position by simultaneously pressing the + and – TRACKING buttons. 4) Record and play back the color bar signal. If necessary, before recording, adjust R353 so that the higher level channel becomes 110% of the noted level "A" during playback. At this time, confirm that the channel difference is within 3 dB.
11	S-VHS mode PB Y level	VIDEO OUT or TP10	R92 (S VHS PB Y LEVEL)	• S-VHS mode • SP mode • REC then PB • Color bars	1) Connect an oscilloscope to VIDEO OUT (TP10). 2) Record the color bar signal in the SP mode, then play it back. 3) Adjust R92 for 0.97 ± 0.03 Vp-p (with 75 Ω load).

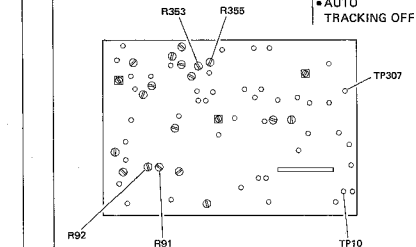
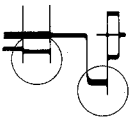
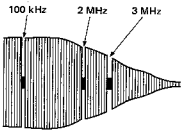
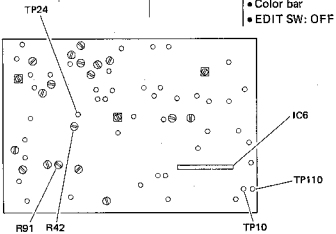
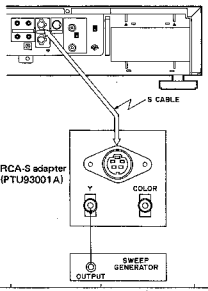


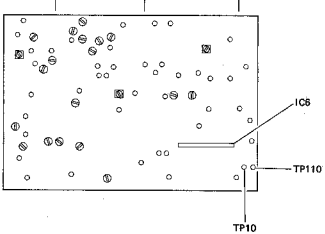
Fig. 2-5-5

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
12	VHS mode PB Y level	VIDEO OUT or TP10	R91 (VHS PB Y LEVEL)	• VHS mode • SP mode • REC then PB • Color bars	1) In the same manner as above (2.5.11), adjust R91 for 0.97 ± 0.03 Vp-p (with 75 Ω load).
13	Sharpness preset	TP24	R42	• S-VHS mode • SP • E-E • Sweeper --- • S-VHS mode • SP • PB • Color bar • EDIT SW: OFF	1) Connect an oscilloscope to TP24. 2) Set the SHARPNESS control of the FRONT panel to the center detent position. 3) Adjust R42 so that the 2 MHz mark, in the state of EDIT SW "OFF", becomes nearly equal to that in the state of EDIT SW "ON". --- **Alternate method:** 1) Connect an oscilloscope to TP110 (Y OUT). 2) Set the SHARPNESS control of the FRONT panel to the center detent position. 3) Play the color bar signal of the MH-2H (or MH-2 if MH-2H is not available) alignment tape. 4) Adjust R42 (SHARPNESS PRESET) to where slight overshoot appears at the sync tip as shown in Fig. 2-5-6.  Fig. 2-5-6
14	S-VHS mode SP frequency response and balance	TP110	R108 [PRE/REC board]	• S-VHS mode • SP mode • REC then PB • Sweeper	1) Terminate TP110 (S-OUT) with a 75 Ω load and set the SHARPNESS control to the center detent position. 2) Connect a signal generator to S-IN and an oscilloscope to TP110. 3) Record in the SP mode, then play back and set 100 kHz level to 3 scale divisions on X axis at CH-1 waveform. 4) Adjust R108 (PRE/REC board) so that the 3.0 MHz level becomes 2.5 to 2.8 scale divisions (−1 ± 0.5 dB). 5) Confirm that the level difference between both channels is less than 2 dB.  Fig. 2-5-7





No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
15	S-VHS mode LP frequency response and balance	TP110	R106 [PRE/REC board]	• S-VHS mode • LP mode • REC then PB • Sweeper	1) In the same manner as above (2.5.14), perform adjustment for LP mode. 2) Record in the LP mode, then play back and set 100 kHz level to 3 scale divisions on X axis at CH-1 waveform. 3) Adjust R106 so that the 3.0 MHz level becomes 2.0 to 2.3 scale divisions (−3 ± 0.5 dB). 4) Confirm that the level difference between both channels is less than 2 dB.
		Monitor	R108 (SP) R106 (LP) [PRE/REC board]	• S-VHS mode • SP and LP modes • REC then PB • Philips pattern	**Alternate method:** 1) Record and playback a Philips pattern. 2) During playback, observe the picture and adjust R108 (SP mode) and R106 (LP mode) for the best resolution, without impaired S/N, at about 250 lines (3 MHz region). 3) So after this adjustment, confirm black or white spot on edges of playback picture in the Still mode.
16	VHS mode SP frequency response and balance	TP110	R130 [PRE/REC board]	• VHS mode • SP mode • REC then PB • Sweeper	1) Terminate TP110 (S-OUT) with a 75 Ω load and set the SHARPNESS control to the center detent position. 2) Connect a signal generator to S-IN and an oscilloscope to TP110. 3) Record in the SP mode, then play back and set 100 kHz level to 3 scale divisions on X axis at CH-1 waveform. 4) Adjust R130 (PRE/REC board) so that the 2.0 MHz level becomes 2.4 to 3 scale divisions (−1 ± 1 dB). 5) Confirm that the level difference between both channels is less than 2 dB.



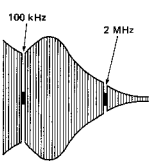
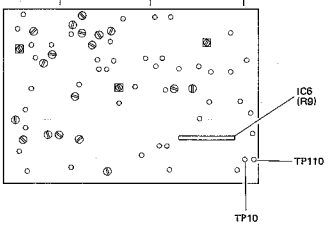


Fig. 2-5-8

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
17	VHS mode LP frequency response and balance	TP110	R131 [PRE/REC board]	• VHS mode • LP mode • REC then PB • Sweeper	1) In the same manner as above (2.5.16), perform adjustment for LP mode. 2) Record in the LP mode, then play back and set 100 kHz level to 3 scale divisions on the screen at CH-1 waveform. 3) Adjust R131 (PRE/REC board) so that the 2 MHz level becomes 1.5 to 2.4 scale divisions (-5^{+3}_{-1} dB). 4) Confirm that the level difference between both channels is less than 2 dB.
		Monitor	R130 (SP) R131 (LP) [PRE/REC board]	• VHS mode • SP and LP modes • REC then PB • Philips pattern	**Alternate method:** 1) Record and play back a Philips pattern. 2) During playback, observe the picture and adjust R130 (SP mode) and R131 (LP mode) for the best resolution, without impaired S/N, at about 160 lines (2 MHz region). 3) So after this adjustment, confirm black or white spot.
18	0.5H delayed color level	TP10	R9 (incl. IC6)	• Color bar • LP mode • REC then PB ↓ • SEARCH FF	1) Connect an oscilloscope to VIDEO OUT or TP10 and set the time base of the oscilloscope to 2 ms/div. Trigger the oscilloscope externally (+ slope) with the signal from TP11 (DRUM FF) or the VIDEO board. 2) During Search, adjust R9 so that the Y level difference is uniform at VIDEO OUT as shown in the figure 2-5-9.



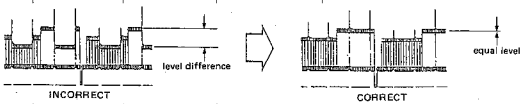
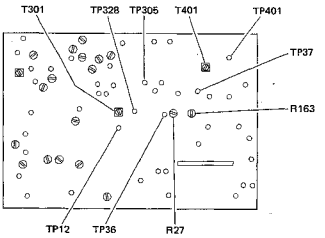
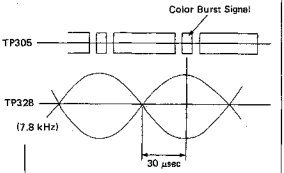
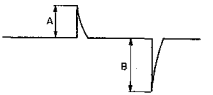


Fig. 2-5-9

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
19	APC error phase	TP305 TP328	T301	• REC then PB • Color bar • SP mode	1) Connect one channel of a dual trase oscilloscope to TP305 and the other channel to TP328. Trigger the oscilloscope exterrally (– slope) with the signal from TP12 (H. SYNC). 2) Set the oscilloscope for ALT mode. 3) Adjust T301 to position the zero-cross 30 μsec ± 3 μsec from the center of the burst signal as shown in the figure 2-5-10.   Fig. 2-5-10
20	SECAM DET.	TP401	T401	• E-E • SECAM color bar	1) Connect an oscilloscope to TP401. 2) Adjust T401 so that A and B are related as follows: A : B = 3 : 4  Fig. 2-5-11
21	0.25H delayed VIDEO-1	TP36	R163	• E-E • Color bar	1) Connect an oscilloscope to TP36. 2) Adjust R163 for maximum output level.
22	0.25H delayed VIDEO-2	TP36 TP37	R27	• E-E • Color bar	1) Connect one channel of a dual-trace oscilloscope to TP36 and the other channel to TP37. 2) Set the oscilloscope for ALT mode. 3) Adjust R27 for equal channel levels.

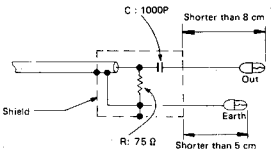
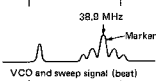
2.6 AUDIO CIRCUIT

Note: ***Unless otherwise noted, all test points and adjustments are located on the AUDIO board.***

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Audio bias level	TP31 TP32	R9 (BIAS ADJ)	• VHS mode • SP mode • No signal	1) Connect a millivoltmeter between TP31 and TP32. 2) Set for REC mode without signal. 3) Adjust R9 for 2.2 mVrms.
2	Audio PB level	AUDIO OUT	R28 (PB LEVEL ADJ)	• REC then PB • SP and LP mode • VHS mode • Audio monitor to Normal	1) Connect an audio tester to AUDIO OUT. 2) Supply an audio signal (–8 dBs/1 kHz) to Peri. IN and record together with a video signal, then play back. 3) Adjust R28 so that the audio output level during playback becomes –6 ± 1 dBs at SP mode (–6 ± 2 dBs at LP mode).
3	REC FM level	TP53	R80 (FM REC ADJ)	• S-VHS mode • SP mode • REC then PB • No signal	1) Connect an oscilloscope to TP53. 2) Record in the SP mode, without an audio signal, then play back. 3) Adjust R80 for 50 mVp-p ± 5 mVp-p FM audio playback voltage.
4	E-E level	AUDIO OUT	R40 (E-E LEVEL[L]) - - - - - - - - - - - - R41 (E-E LEVEL[R])	• ALC: OFF • REC mode • Audio monitor to Hi-Fi	1) Suplly a 1 kHz, –8 dBs audio signal to Peri. IN and a video signal to Peri. IN. 2) Set Hi-Fi REC level controls to detent position. In the REC mode, adjust R40 to obtain –6 ± 0.5 dBs at AUDIO OUT. - 3) In the same manner, adjust R41 for the R (CH-2) channel.
5	Level indicator	FDP (LEVEL IND.)	R73 (LEVEL IND [L]) - - - - - - - - - - - - R74 (LEVEL IND [R])	• Audio monitor to Hi-Fi • E-E (Stop) mode • LEVEL INDICATOR SW: ON	**Note:** ***Perform the level indicator adjustment after completing the E-E level adjustment (section 2.6.4).*** 1) Supply a 1 kHz, –8 dBs audio signal to Peri. IN. 2) Set Hi-Fi REC level controls to detent position. In the E-E (Stop) mode, adjust R73 to the point where the FDP level indicators show 0 dB. - 3) In the same manner, adjust R74 for the R (CH-2) channel.

2.7 TUNER/IF CIRCUIT

Note: *Unless otherwise noted, all test points and adjustments are located on the TUNER/IF board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
	• **Equipment required:** 1. Oscilloscope 2. IF sweep signal generator with suitable markers (PIF, SIF, etc.) 3. Sweeper probe (sweep signal supply cable) as shown on the right.				 **Fig. 2-7-1**
1	VCO	IC1 pin 28	T2 (VCO)	• Sweep generator out: 70 dBμ (38.9 MHz) • Tuner mode without antenna IN	1) Use a sweeper probe as shown in Fig. 2-7-1 and connect the sweep generator output to pin 1 of SAW 1. Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope. Connect the oscilloscope to pin 28 of IC1 (VIDEO DET OUT) and adjust T2 to align the waveform with the frequency marker as shown in Fig. 2-7-2.
		 VCO and sweep signal (beat) **Fig. 2-7-2**			
				• TV broadcast • Tuner mode	**Alternate method:** 1) Receive a color broadcast on a VHF-HI channel (7 to 13). 2) Adjust T2 to obtain a fine picture on the monitor.
	• **Before the following adjustments:** 1. Connect a cable to ANT IN and terminate TV OUT at 75 Ω. 2. Set a TV channel signal generator as follows. Video : 70 dBμ/75 Ω, color bar 87.5% modulation Audio : 62 dBμ/75 Ω, 1 kHz ± 25 kHz deviation				
2	RF AGC	IF terminal of Front end	R21 (RF AGC)	• TV signal • Tuner mode	1) Connect the oscilloscope to IF terminal of U/V Tuner (Front end). Adjust R21 for maximum level, then again adjust R21 for −10 dB gain.
		Monitor	R21 (RF AGC)	• TV broadcast • Tuner mode	**Alternate method:** **Note:** *Adjust R21 (RF AGC) to correct for excess noise in the picture or when streaky cross interference occurs due to strong electrical fields.* 1) Adjust R21 to minimize noise or streaks on the TV screen. 2) Check for absence of abnormality on all channels.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
3	Color level	JP1 pin 12	R40 (COLOR LEVEL)	• TV broadcast • Tuner mode • Color bar	1) Receiving a color bar signal, set the Y level for 100% reference signal and then adjust R40 for a magenta level of 56% at pin 12 of JP1.

Y level = 1 a : b = 1 : 0.56
Magenta level = 0.56

Fig. 2-7-3

2.8 DEMODULATOR CIRCUIT

Note: *Unless otherwise noted, all test points and adjustments are located on the DEMODULATOR board.*

Audio Multiplex TV Signal Generator

Recommended Specifications

1. Signal Format — Based on CCIR-B
2. Frequency
   - Video Carrier Fv — 38.9 MHz
   - 1st Sound Carrier fs_1 — 33.4 MHz
   - 2nd Sound Carrier fs_2 — 33.1578125 MHz
3. Modulator
   - Video — Crosshatch (black on white) V: 50 Hz, H: 15.625 kHz
   - Audio — Sinewave 1 kHz; CH1 and CH-2 outputs switchable
4. Output — 97 dB/μV (open) ± 2 dB fixed, BNC-R 75 Ω
5. P-S Ratio — S_1 P – 13 dB ± 2 fixed; S_2 P – 20 dB ± 2 fixed
6. Modulation
   - Video — 87.5% ± 3%
   - Audio — ±30 kHz ± 2 kHz
7. Stereo Separation — Less than –40 dB
8. Pilot Signal
   - Carrier Frequency — 54.6875 kHz ± 5 Hz synchronized type
   - Stereo — 117.5 Hz AM 50%
   - Dual — 274.1 Hz AM 50%

9. Sound Modulation Modes	S_1	S_2
Mono	Mono 1	Mono 2
Stereo	(L + R)/2	R
Dual	Mono 1	Mono 2

10. Functions	S_1	S_2
Mono (M)	100%	100%
Stereo (L, R)	(L+R)/2	R
(L)	L/2	–
(R)	R/2	R
(OFF)	–	–
Mult (S_1, S_2)	100%	100%
(S_1)	100%	0
(S_2)	0	100%
(OFF)	0	0
V. MOD (ON/OFF)		

11. Frequency Accuracy — Within $\pm 5 \times 10^{-5}$
12. Spurious — Less than –50 dB
13. Saw Filter — Self-contained

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	First audio detector coil	IC1 pin 3	T4 [IF PWB]	•BILING mode •SUB: unmod. •MAIN: mod.	1) Apply Main audio modulated signal to the front end IF terminal. 2) Connect a distortion meter to IC1 pin 3. 3) Adjust T4 of the IF baord for minimum distortion. **Note:** *Audio multiplex TV signal generator connection is the same for the following adjustments.*
2	Second audio detector coil	IC1 pin 2	T1	•BILING mode •SUB: mod. •MAIN: unmod.	1) Connect a distortion meter to IC1 pin 2. 2) Adjust T1 of the IF board for minimum distortion.
3	Stereo separation	IC1 pin 5	R2	•STEREO mode •R : mod. •L : unmod.	1) Set a signal generator to Stereo mode, but adjust only the R channel. 2) Connect an oscilloscope to IC1 pin 5. 3) Adjust R2 for minimum output level.
4	Buzz	CN2 pin 2	T8, T2 [IF PWB]	•STEREO mode •R/L : unmod.	1) Connect a noise meter to CN2 pin 2 and an oscilloscope to AC output of the noise meter. 2) Adjust T8 of the IF board for minimum Philips pattern noise. 3) Adjust T2 of the IF board for minimum crosshatch noise.
5	Audio output level	CN2 pin 2 (L) CN2 pin 4 (R)	R21 (L) R24 (R)	•STEREO mode •R: mod./unmod. •L: unmod./mod.	1) Set a signal generator for Stereo mode. 2) Connect an audio meter to CN2 pin 2. 3) Adjust R21 (L channel) for –14.0 dBs. 4) Similarly, connect an audio meter to pin 4 of CN2 and adjust R24 for the R channel.

2.9 PRE/REC CIRCUIT

Note: *Unless otherwise noted, all test points and adjustments are located on the PRE/REC board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Video head resonance & Q (quality factor)	TP6	CH-1 C7 (F) R11 (Q)	• Sweep signal • PB • SP mode	Note: *1) This adjustment is required only when flicker or black fringe noise appears after replacing the upper drum (video heads).* *2) Connect ground of probe (oscilloscope) to shield case of the PRE/REC board.* *3) Set the adjust coil after loading and remove it before unloading to prevent damage by loading poles.* 1) Disconnect a connector of CN1 from the SERVO board. Connect and use the Q adjust fixture (PTU94006A) as shown in Fig. 2-9-1. 2) Set for the playback mode with a dummy cassette.* * Dummy cassette: Cut the tape and cover the photo sensing holes with opaque tape. 3) Set the adjust coil onto the upper drum as shown in Fig. 2-9-2. 4) Connect an oscilloscope to TP6 of the PRE/REC board. Supply a sweeper generator output to the adjustment as shown in Fig. 2-9-2. Then, adjust the sweeper generator gain so that the waveform does not distort at TP6. 5) Trigger the oscilloscope externally with the signal from TP11 (DRUM FF) of the VIDEO board. Use (—) trigger for CH-1 and (+) trigger for CH-2. 6) Adjust C7 to set the CH-1 resonance point to 8 MHz. Use the control of the oscilloscope to position the 1 MHz region at graduation 2 of the oscilloscope scale. 7) Adjust R11 to position the 8 MHz portion at 4 of the oscilloscope graduation as shown in Fig. 2-9-3.
			CH-2 C5 (F) R15 (Q)		8) Change the adjust coil to CH-2 position, and, in the same manner as for CH-1, adjust C5 and R15 for CH-2.
		TP7	CH-1 C4 (F) R13 (Q)	• Sweep signal • PB • LP mode	9) Repeat the above steps (1 to 7) for the LP mode. Adjust resonance with C4 and Q with R13.
			CH-2 C2 (F) R12 (Q)		10) Similarly, perform adjustment in the same manner as for CH-1. Adjust resonance with C2 and Q with R12.

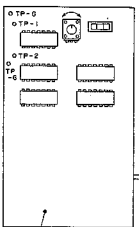


Fig. 2-9-1

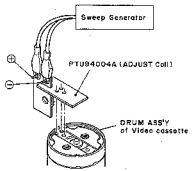


Fig. 2-9-2

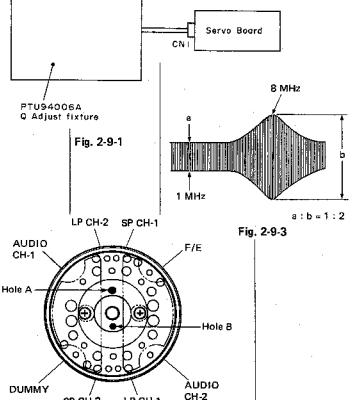
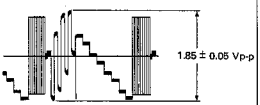


Fig. 2-9-3

Fig. 2-9-4

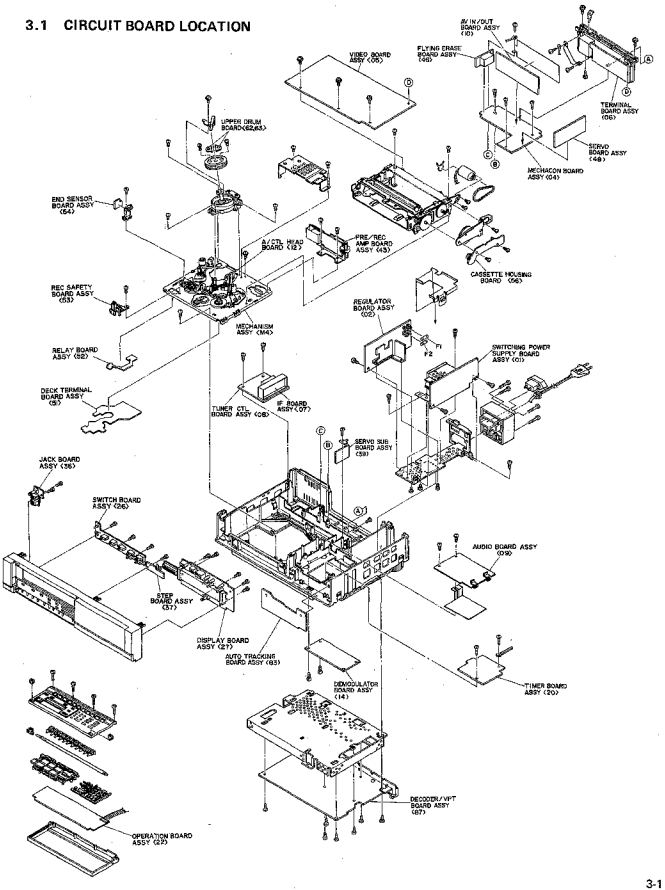
2.10 DECORDER/VPT CIRCUIT

Note: *Unless otherwise noted, all test points and adjustments are located on the DECORDER/VPT board.*

No.	Item	Check Point	Adjustemnt Parts	Signal & Mode	Description
1	VCO	IC505-17	C524	• E-E • NO SIGNAL	1) Do not connect anything to the antenna input connector. 2) Connect a frequency counter between IC505 -17 and GND. 3) Adjust C524 for 6000 ± 0.2 kHz.
2	Baseband AGC	IC13-29	R55	• E-E • D2-MAC colour bar signal • TUNER	1) Connect an oscilloscope to IC13-29. 2) Short between Q65-Base and GND. 3) Adjust R55 for 1.85 ± 0.05 Vp-p.  **Fig. 2-10-1**
3	Colour level	Q40-E	R231	• E-E • D2-MAC colour bar signal • TUNER	1) Connect an oscilloscope to Q40-Emitter. 2) Adjust R231 for 170 ± 10 mVp-p.
4	Fsc	Q40-E	C167	• E-E • D2-MAC colour bar signal • TUNER	1) Connect a frequency counter between Q40-Emitter and GND. 2) Adjust C167 for 4.433619 ± 0.00001 MHz.

SECTION 3
CHARTS AND DIAGRAMS

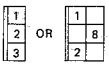
3.1 CIRCUIT BOARD LOCATION



3.2 GENERAL INFORMATION

3.2.1 Connections

Note:
Unless otherwise specified, only signal input flow is indicated.
Connection arrows indicate only signal outputs.



: Connectors

: Board in connectors

: Direct connections

VS : Connected pattern in the board.
MS
SM

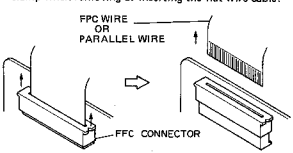
Abbreviations

V :	Video	M :	Mechacon
S :	Servo	A :	Audio

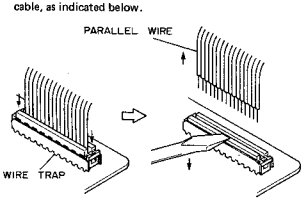
VS : Signal flow from video to servo.

3.2.2 Disconnecting the flatwire

1. Pull the connector structure upward to release the clamp when removing or inserting the flat wire cable.

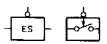


2. Depress the connector structure downward to release the clamp when removing or inserting the flat wire cable, as indicated below.

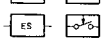


3.2.3 Indications

AUX : Active only at high.
$\overline{AUX}$: Active only at low.
$\overline{AUX}$: Active only at middle.
$\overline{AUX}$: Active only at open.



: Active only at low for electronic switch.



: Active only at high for electronic switch.

: Low pass filter.

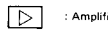
: High pass filter.

: Band pass filter.

: Limiter.

: Detector

: Amplifier.



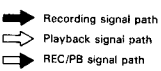
: Mixer stage.

3.2.4 Schematic diagram values

Unless otherwise specified.

1. All resistance values are in ohms, 1/6 W, 1/8 W, (refer to parts list).
2. All capacitance values are in μF, (P; PF).
3. All inductance values are in μH, (m; mH).
4. All diodes are 1SS133 or MA165, (refer to parts list).
5. Voltages are DC-measured (reference to ground) with a digital voltmeter during recording (SP mode) and playback (SP mode) with alignment tape. Where voltages differ between recording and playback, the voltage during playback is shown in parentheses.
6. Waveforms (VIDEO System) are measured (reference to ground) with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.
7. Waveforms (AUDIO System) are measured (reference to ground) with 1 kHz (−8 dBs) during recording and playback with alignment tape (1 kHz).
8. Shaded (▒▒▒) parts are critical for safety. Replace only with specified parts numbers.

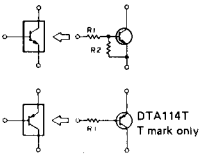
3.2.5 Signal flow in the schematic



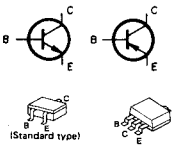
Recording signal path
Playback signal path
REC/PB signal path

3.2.6 Semiconductors

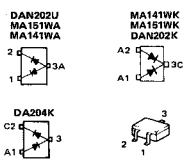
1. Digital transistor



2. Chip transistor



3. Chip diode



Note:
The digital transistor includes built in resistors.
It features small size and high reliability.
Both PNP and NPN types are available.

Uses:
Inverter, Interface, driver circuits.

3.2.7 Replacement of chip parts

For replacing chip parts, proceed it as follows.
Use a well insulated fine-tipped soldering iron (approx. 17 W, 130°C ~ 260°C in temp.).
In addition, it is recommended to use a soldering iron (55 W approx.) with solder absorber for convenience.

Caution:
- Do not apply heat for more than 3 seconds.
- Do not rub electrodes.
- Do not reuse chips removed once. Discard them.
- Supplementary cementing is not required.

1. Soldered condition of chip parts

- Resistors, capacitors, etc.

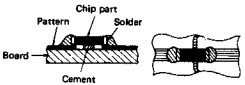


Fig. 3-2-1 Soldering condition-1

- Transistors, diodes, etc.

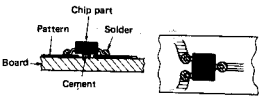


Fig. 3-2-2 Soldering condition-2

2. How to remove chip parts

- Resistors, capacitors, etc.

1) Set a chip parts replacing tool onto the chip parts to hold it down.
2) Unsolder at a side of the chip parts.

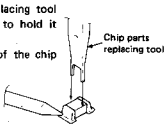


Fig. 3-2-3 R/C removal-1

3) Remove the chip parts by twisting and sliding it.

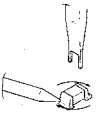


Fig. 3-2-4 R/C removal-2

3. How to remove transistors, diode.

1) Unsolder at the one-lead side of the chip parts.

Fig. 3-2-5 Tr/Diode removal-1

2) Lift the unsoldered side upwards.

Fig. 3-2-6 Tr/Diode removal-2

3) Heat the other two leads simultaneously and remove the chip parts upwards.

Fig. 3-2-7 Tr/Diode removal-3

4. Preheating and soldering

When setting new chip parts, especially capacitors, but except transistors, preheat them with hot air (150°C approx.) by use of a blower type of hair dryer for about 2 minutes just before soldering. For soldering, use a soldering iron of 30 watt approximately.

5. How to set and solder chip parts

1) Presolder the contact points of the circuit pattern to which the chip parts will be soldered.

Fig. 3-2-8 Soldering-1

2) Holding down the chip parts with the chip parts replacing tool, solder it with a soldering iron.

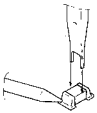
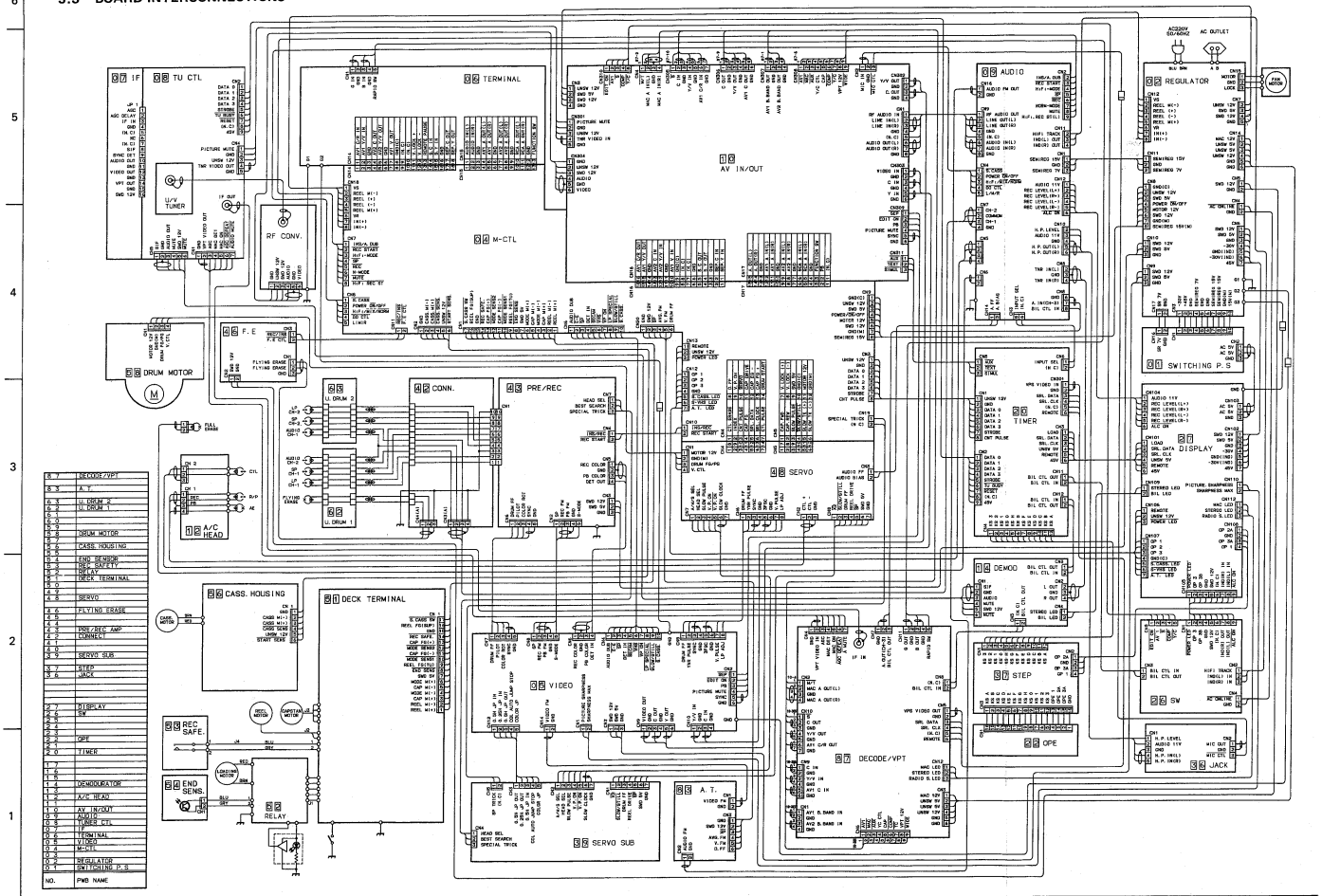
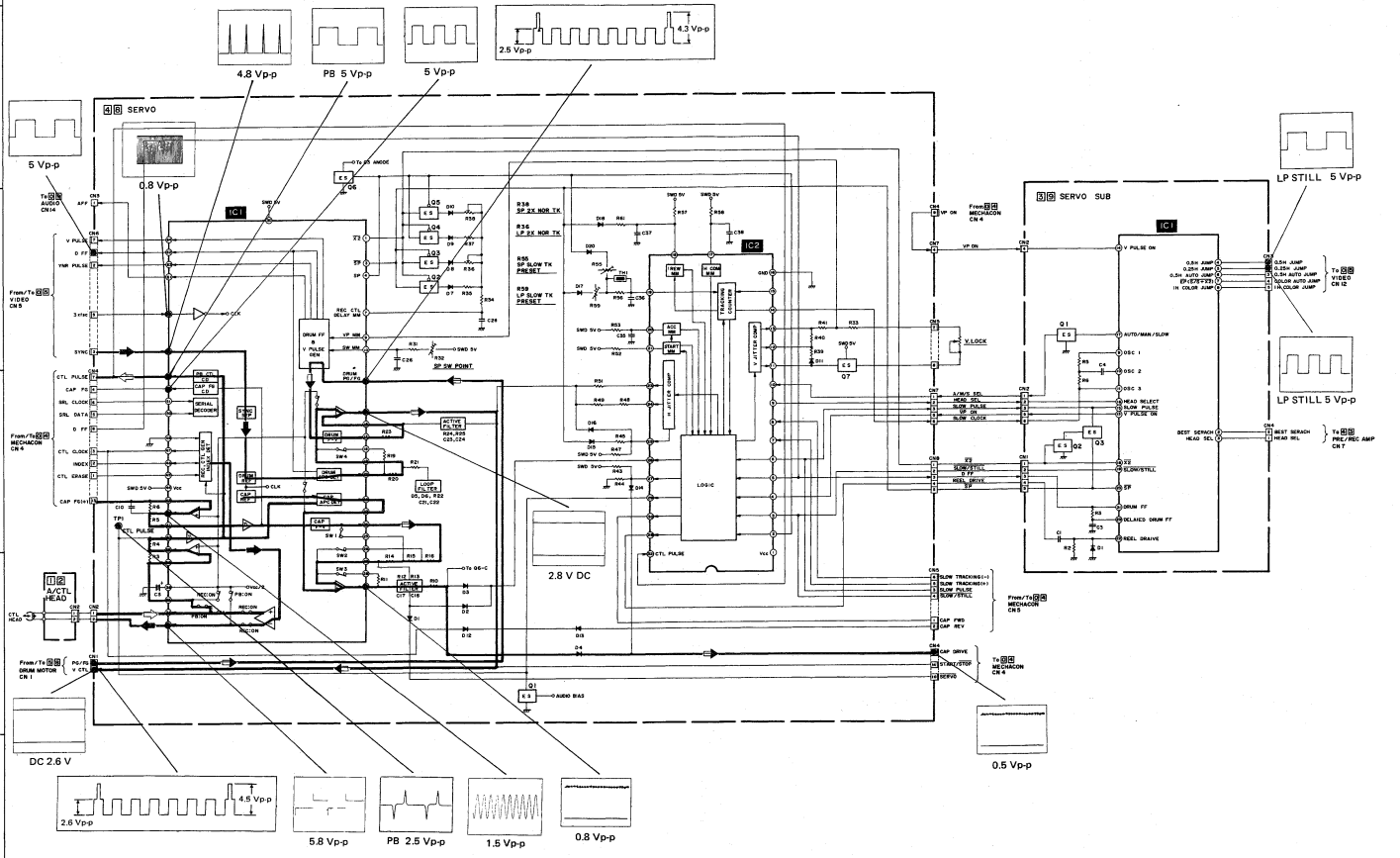


Fig. 3-2-9 Soldering-2

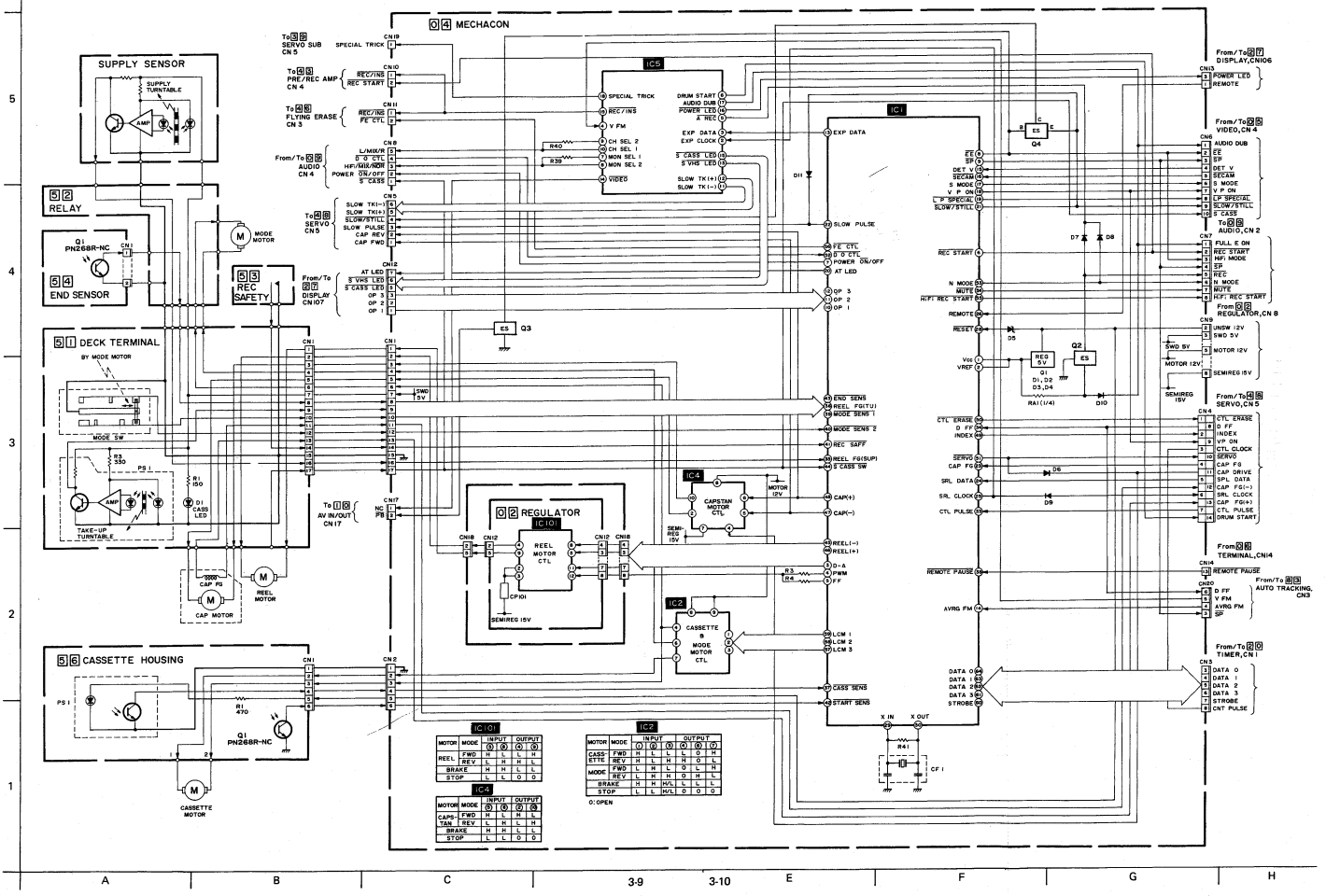
3.3 BOARD INTERCONNECTIONS



3.4 SERVO BLOCK DIAGRAM



3.5 MECHACON BLOCK DIAGRAM



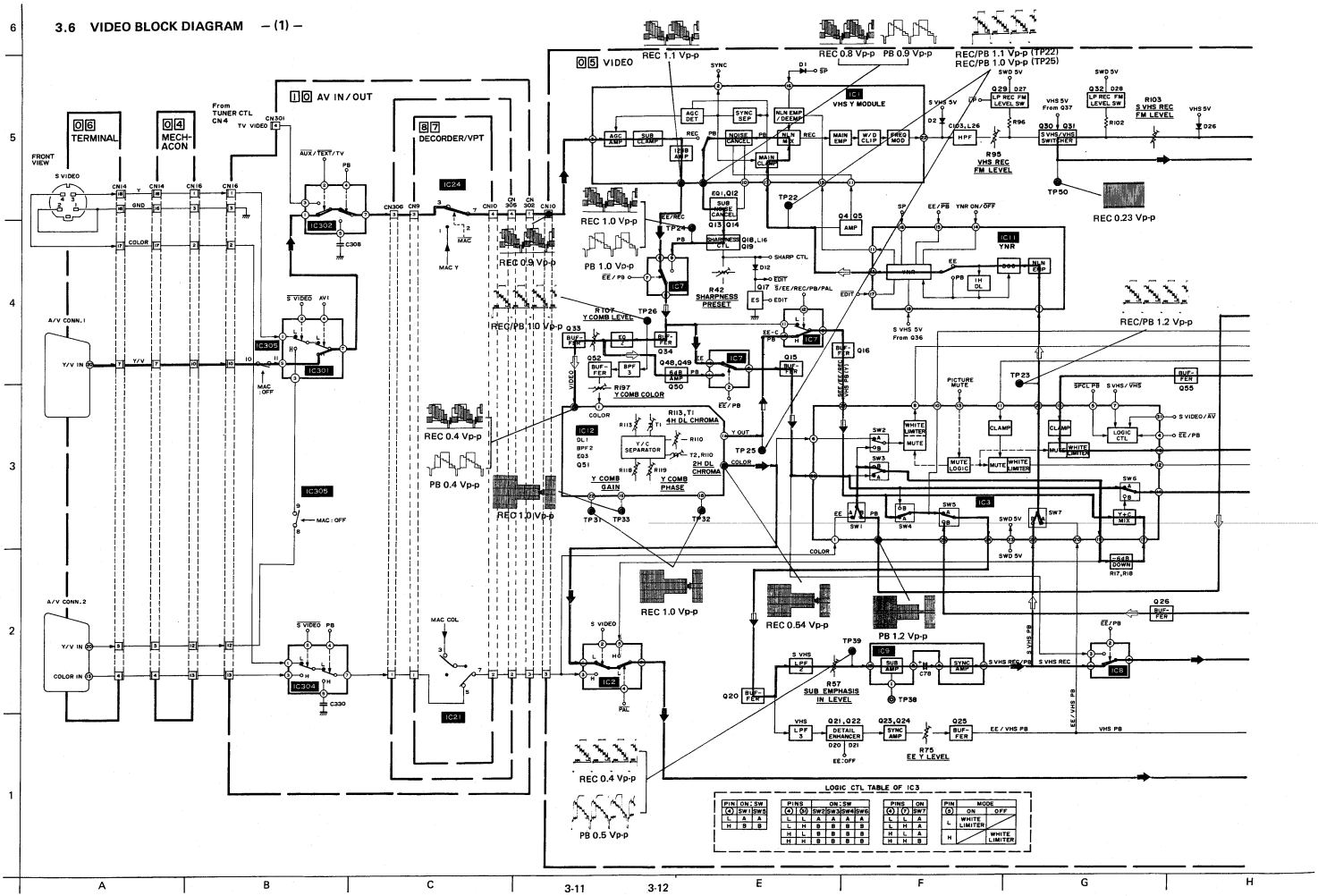
IC101		INPUT		OUTPUT	
MOTOR	MODE	⓪	⓪	⓪	⓪
REEL	FWD	H	L	L	H
	REV	L	H	H	L
	BRAKE	H	H	L	L
	STOP	L	L	O	O

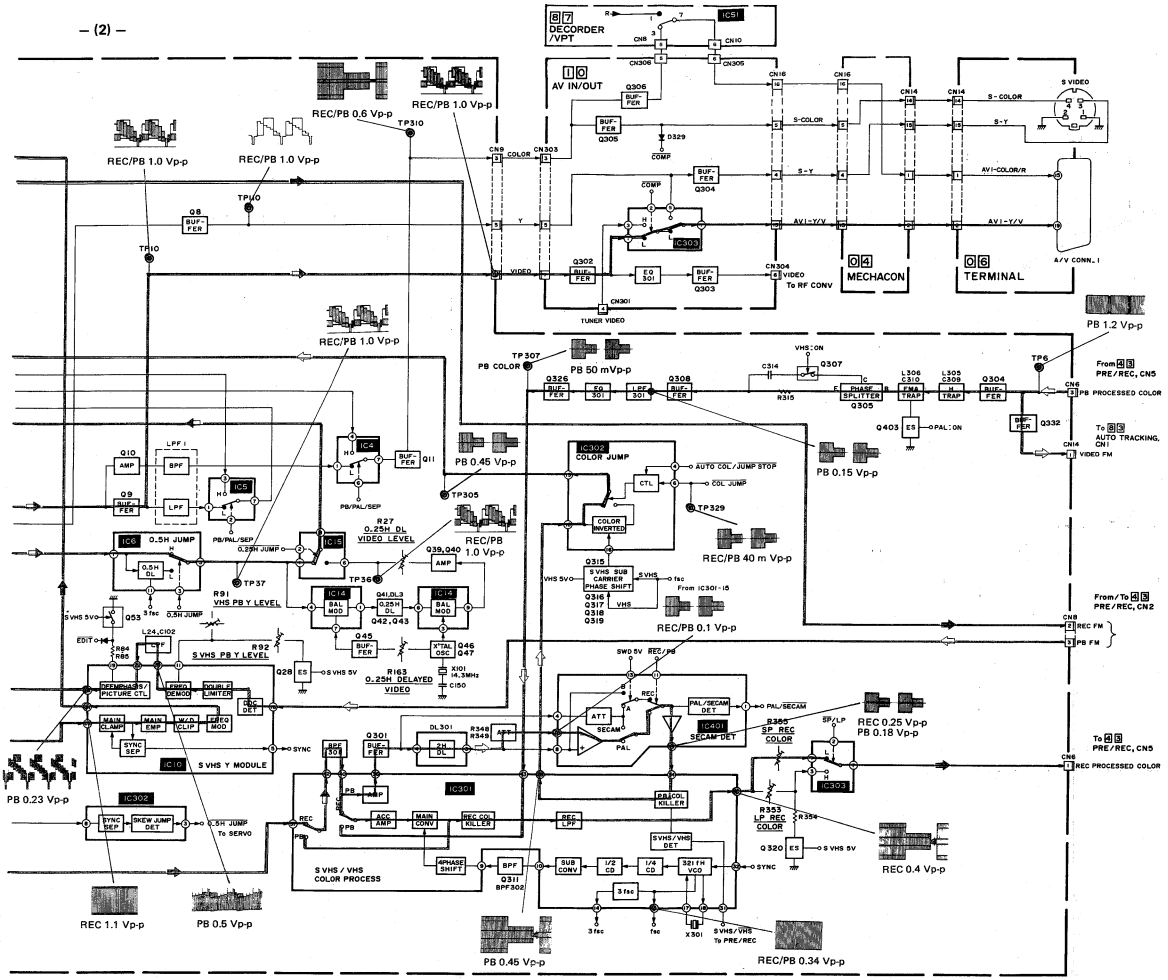
IC4		INPUT		OUTPUT	
MOTOR	MODE	⓪	⓪	⓪	⓪
CAPSTAN	FWD	H	L	H	L
	REV	L	H	L	H
	BRAKE	H	H	L	L
	STOP	L	L	O	O

IC2		INPUT			OUTPUT		
MOTOR	MODE	⓪	⓪	⓪	⓪	⓪	⓪
CASSETTE	FWD	H	L	L	L	O	H
	REV	H	L	H	H	O	L
MODE	FWD	L	H	L	O	L	H
	REV	L	H	H	O	H	L
	BRAKE	H	H	H/L	L	L	L
	STOP	L	L	H/L	O	O	O

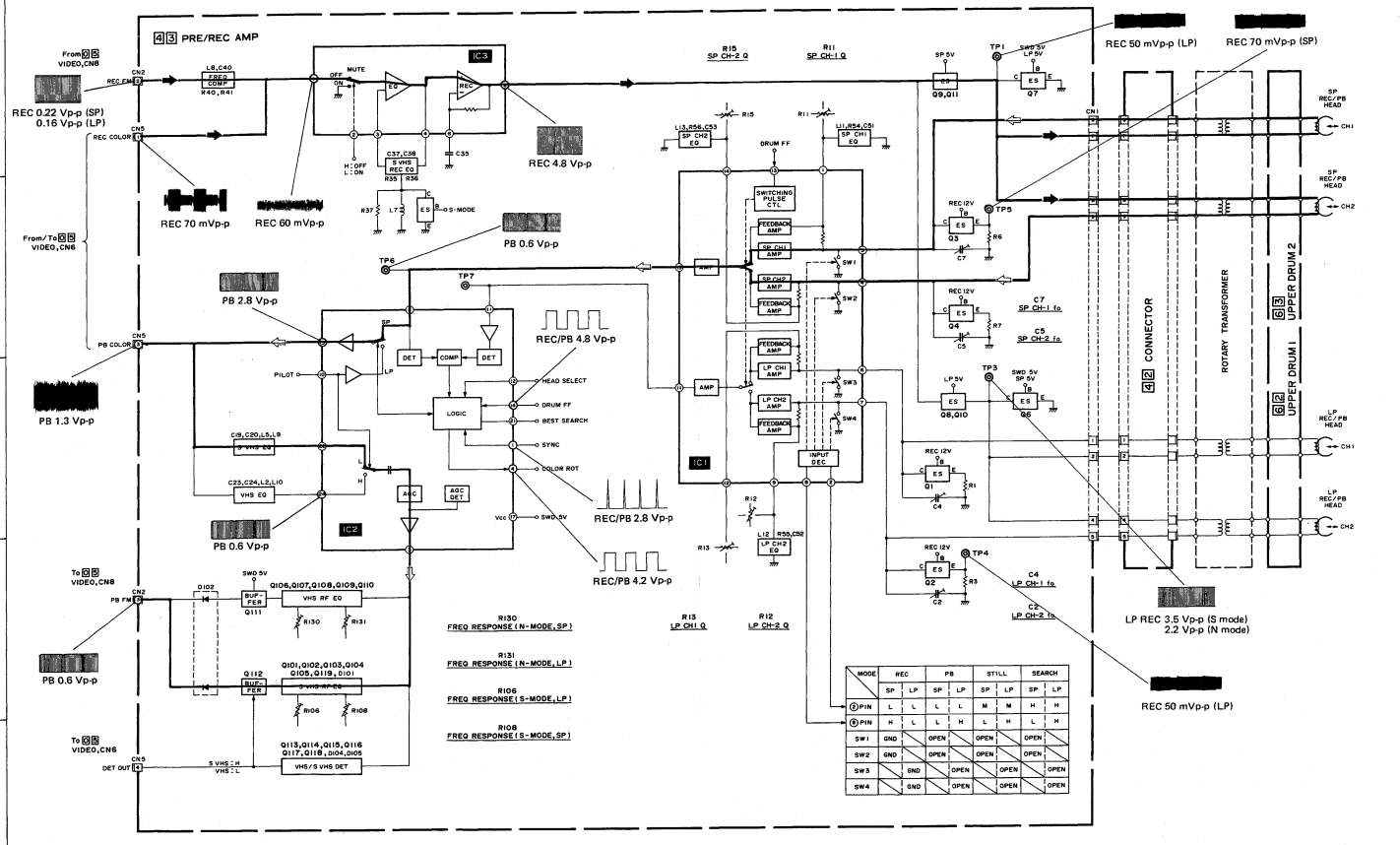
O: OPEN

3.6 VIDEO BLOCK DIAGRAM – (1) –



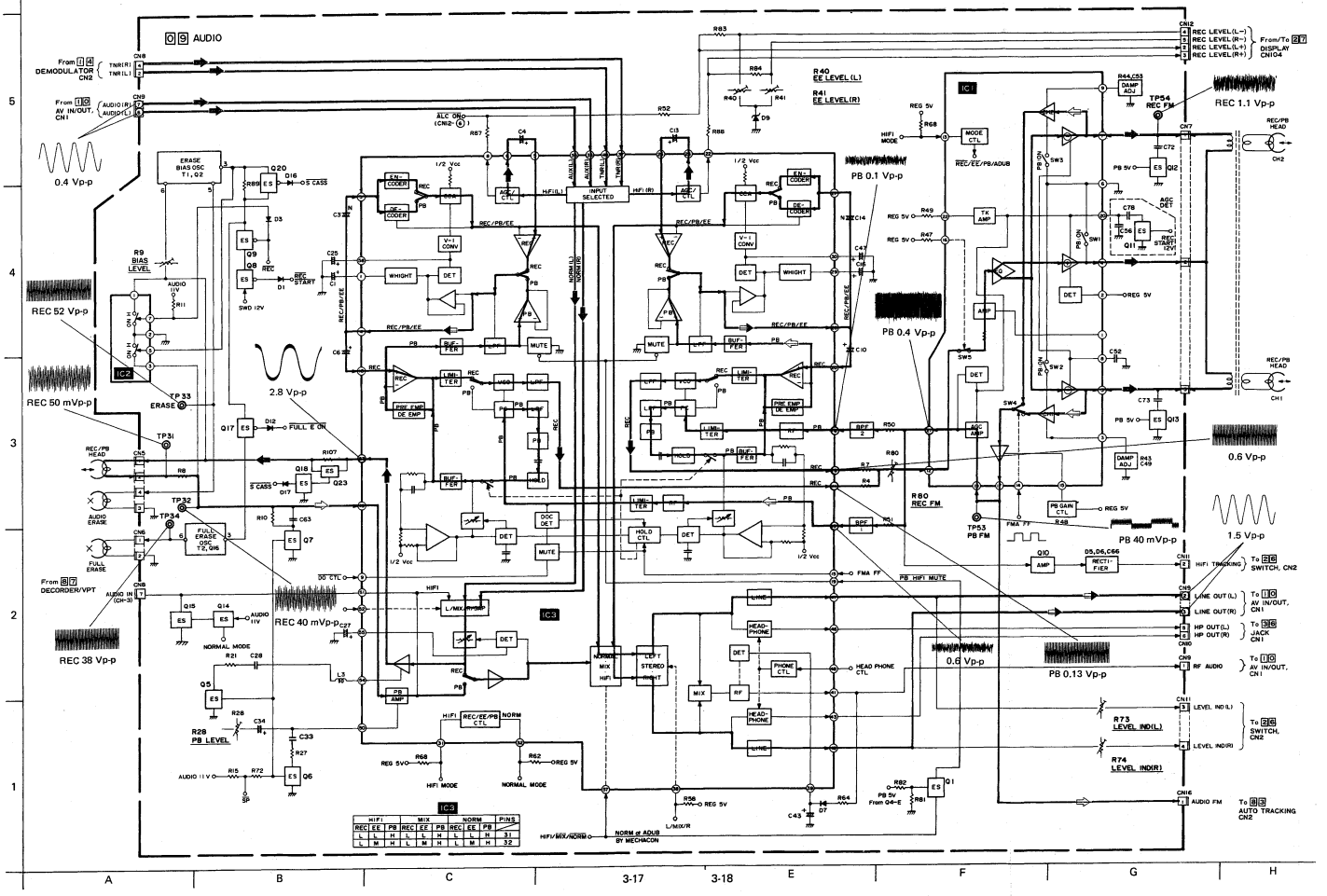

7 DECORDER /VPT
IC51
10 AV IN/OUT
04 MECHACON
06 TERMINAL
S VIDEO
S-COLOR
S-Y
AV1-COLOR/R
AV1-Y/V
A/V CONN. 1
REC/PB 0.6 Vp-p
REC/PB 1.0 Vp-p
TP310
TP110
TH110
COLOR
VIDEO
TUNER VIDEO
To RF CONV
PB 1.2 Vp-p
From 4 5 PRE/REC, CN5
PB PROCESSED COLOR
To 8 5 AUTO TRACKING, CN1
VIDEO FM
TP307
PB COLOR
PB 50 mVp-p
PB 0.15 Vp-p
PB 0.45 Vp-p
TP305
REC/PB 40 m Vp-p
TP329
REC/PB 0.1 Vp-p
From/To 4 5 PRE/REC, CN2
REC FM
PB FM
REC 0.25 Vp-p
PB 0.18 Vp-p
To 4 5 PRE/REC, CN5
REC PROCESSED COLOR
REC 0.4 Vp-p
PB 0.23 Vp-p
REC 1.1 Vp-p
PB 0.5 Vp-p
PB 0.45 Vp-p
REC/PB 0.34 Vp-p
IC302 COLOR JUMP
AUTO COL/JUMP STOP
COL JUMP
COLOR INVERTED
IC4
IC5
IC6 0.5H JUMP
IC14
IC16
IC10 S VHS Y MODULE
IC301
IC401 SECAM DET
IC303
R27 0.25H DL VIDEO LEVEL
R91 VHS PB Y LEVEL
R92 S VHS PB Y LEVEL
R163 0.25H DELAYED VIDEO
R353 LP REC COLOR
R365 SP REC COLOR
S VHS / VHS COLOR PROCESS
PB COL KILLER
REC COL KILLER
REC LPF
S VHS/VHS DET
To PRE/REC

3.7 PRE/REC BLOCK DIAGRAM



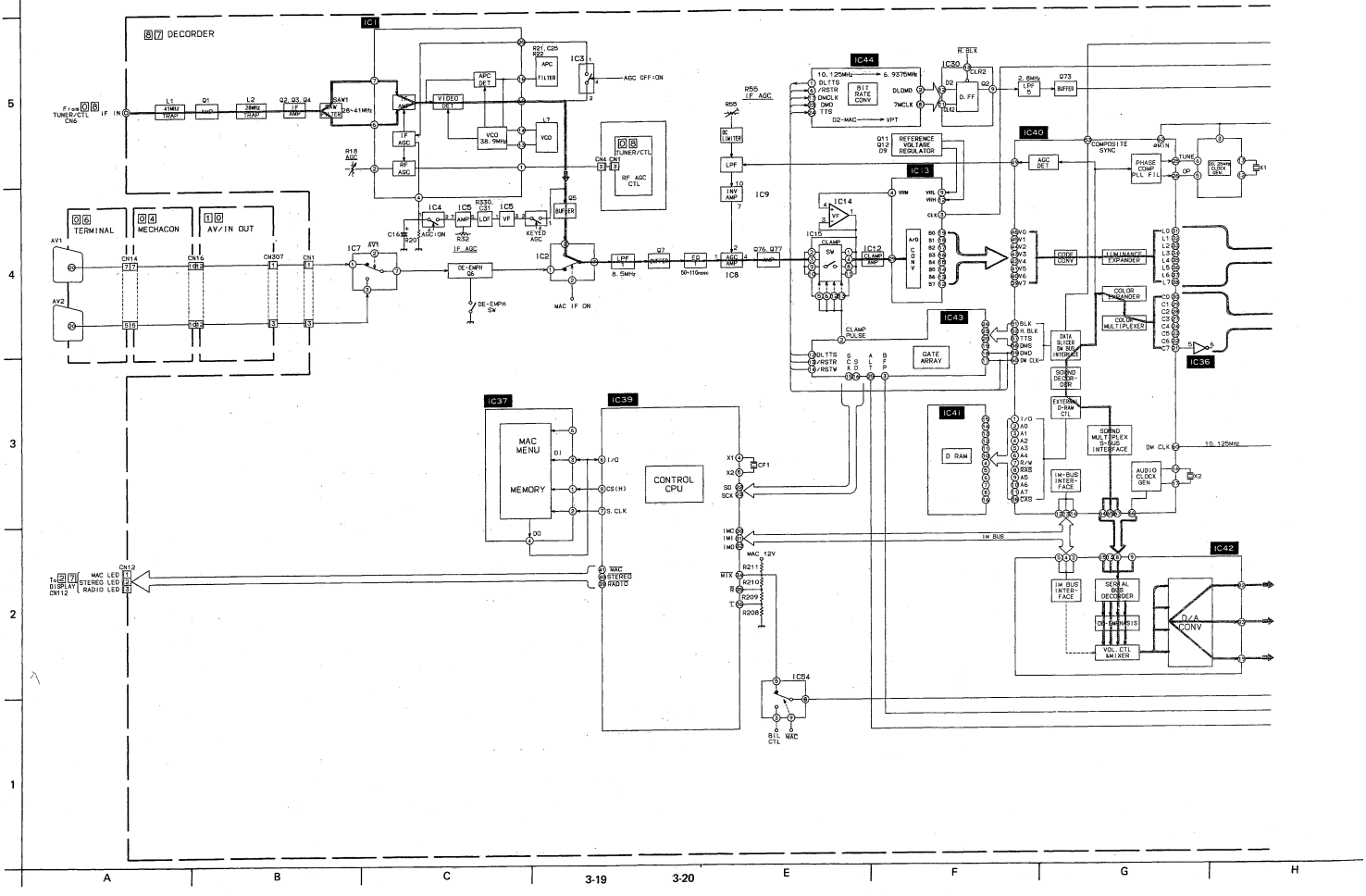
MODE	REC		PB		STILL		SEARCH	
	SP	LP	SP	LP	SP	LP	SP	LP
Ⓟ PIN	L	L	L	L	M	M	H	H
Ⓟ PIN	H	L	L	H	L	H	L	H
SW1	GND		OPEN		OPEN		OPEN	
SW2	GND		OPEN		OPEN		OPEN	
SW3		GND		OPEN		OPEN		OPEN
SW4		GND		OPEN		OPEN		OPEN

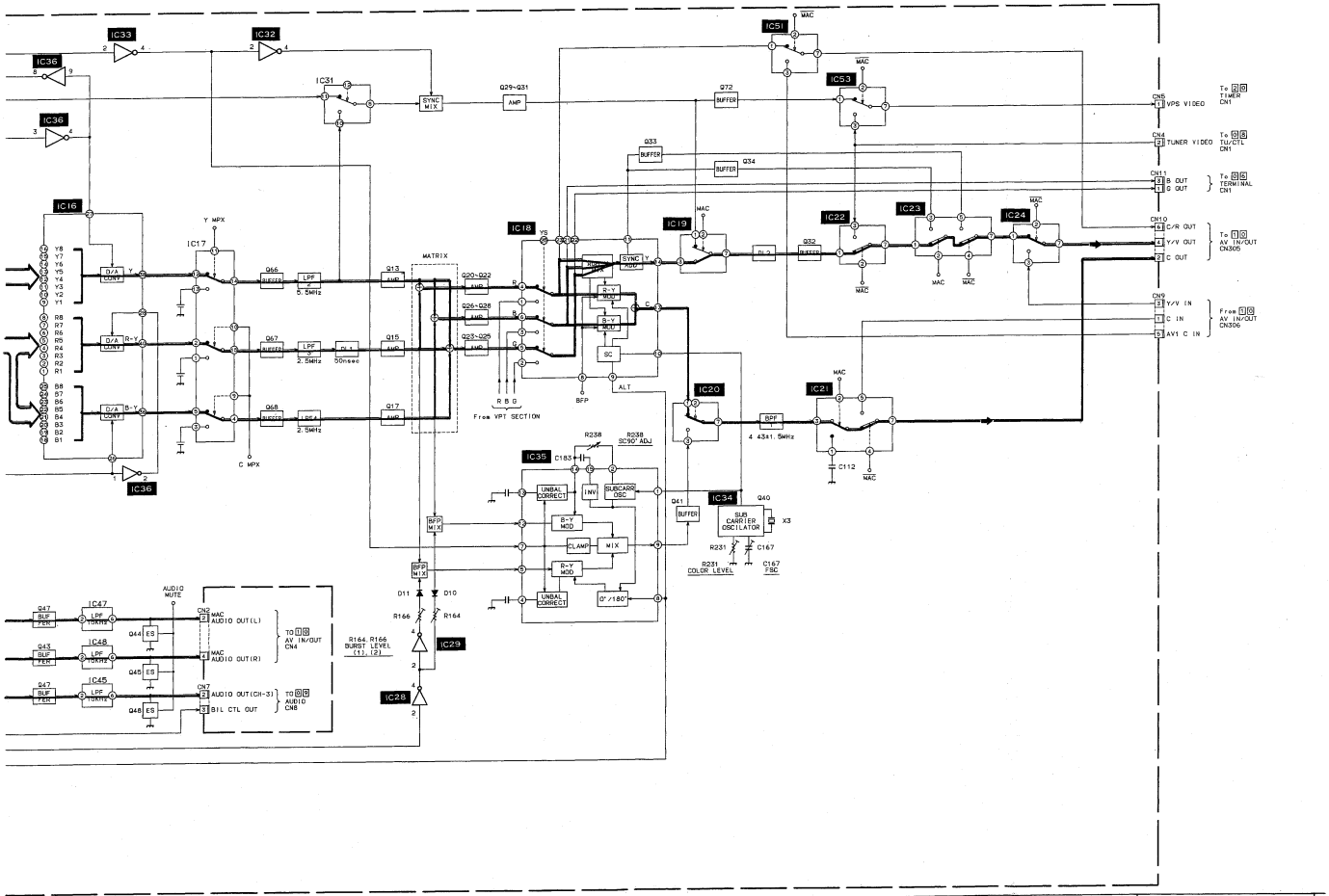
3.8 AUDIO BLOCK DIAGRAM



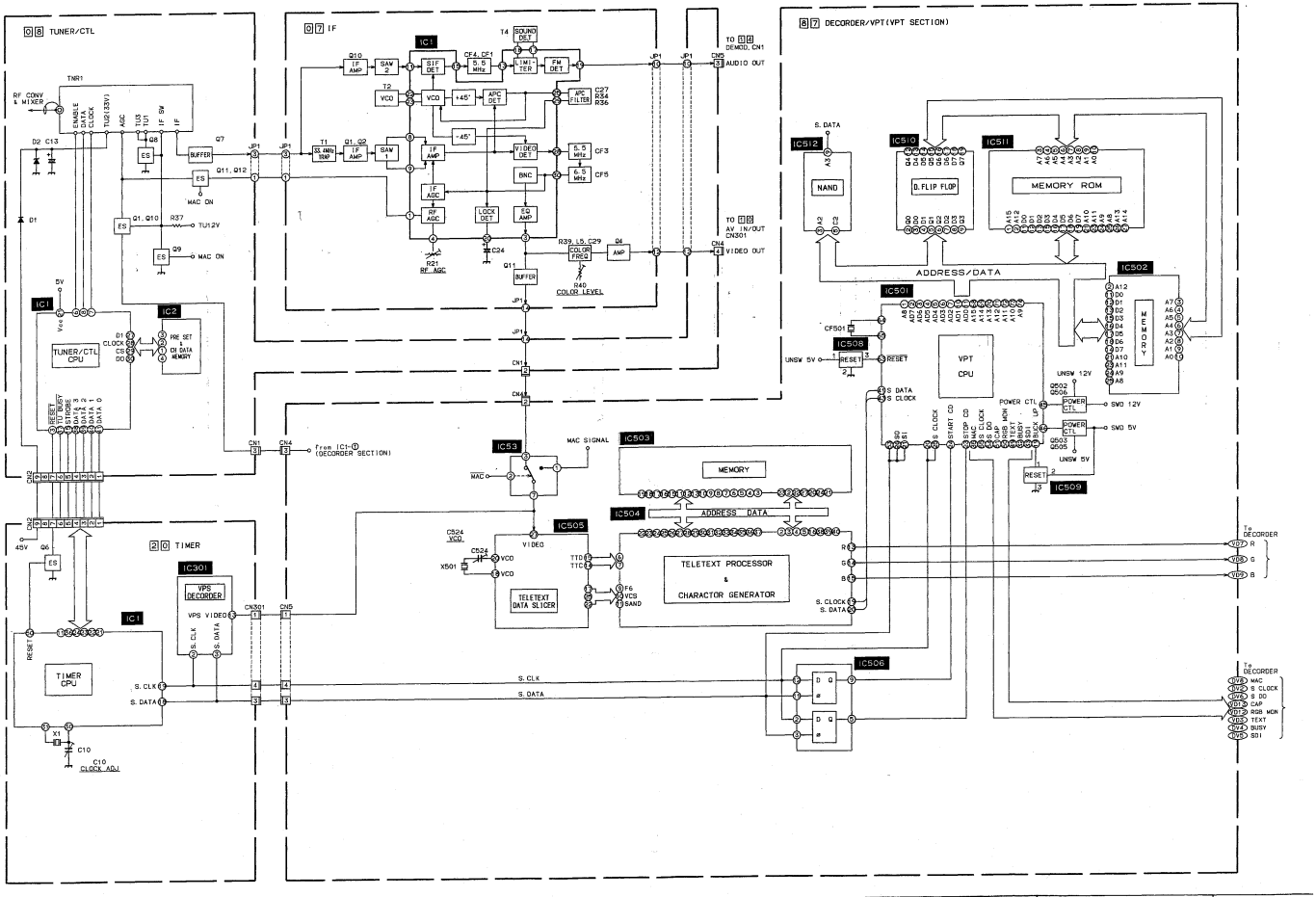
HIFI			MIX			NORM			PINS
REC	EE	PB	REC	EE	PB	REC	EE	PB	
L	L	H	L	L	H	L	L	H	31
L	M	H	L	M	H	L	M	H	32

3.9 DECORDER/VPT BLOCK DIAGRAM – (1) –

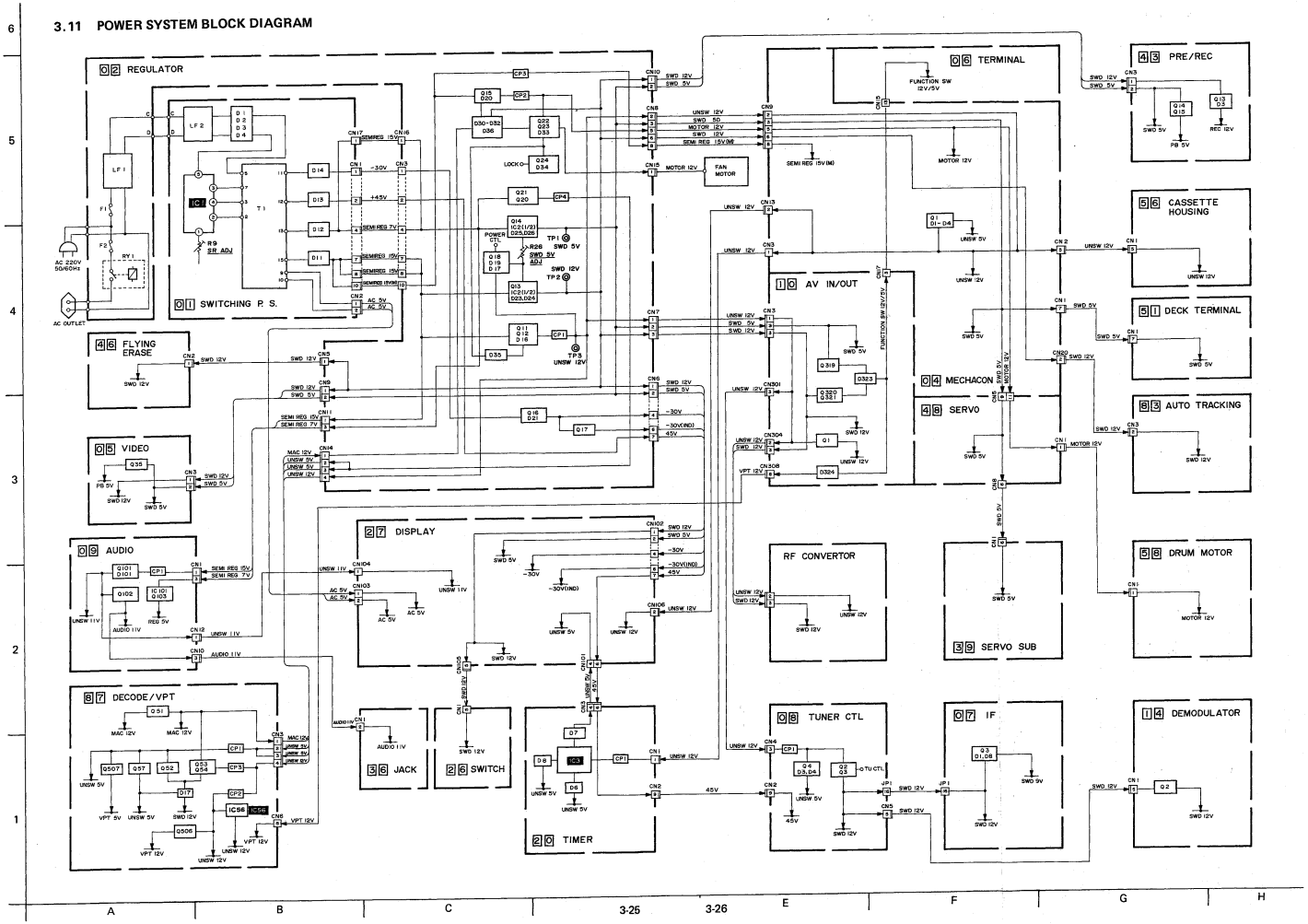



IC33
IC32
IC36
IC51
IC53
IC31
SYNC MIX
Q29-Q31
AMP
Q72
BUFFER
CN5
VPS VIDEO
To 9 6 TIMER CN1
CN4
TUNER VIDEO
To 9 6 TU/CTL CN1
Q33
Q34
CN11
B OUT
G OUT
To 9 6 TERMINAL CN1
IC16
IC17
Y MPX
IC18
IC19
IC22
IC23
IC24
CN10
C/R OUT
Y/V OUT
C OUT
To 1 0 AV IN/OUT CN305
CN9
Y/V IN
C IN
AV1 C IN
From 1 0 AV IN/OUT CN306
MATRIX
Q66
Q67
Q68
LPF
5.5MHz
2.5MHz
DL 1
50nsec
Q13
Q15
Q17
AMP
Q20-Q22
Q26-Q28
Q23-Q25
R G B
From VPT SECTION
SYNC ADD
R-Y ADD
B-Y ADD
SC
BFP
ALT
IC20
IC21
BPF
4.4341.5MHz
C112
IC35
C183
R238
R238 SC90° ADJ
UNBAL CORRECT
INV
SUBCARR OSC
R-Y MOD
CLAMP
MIX
B-Y MOD
0°/180°
BFP MIX
Q41
BUFFER
IC34
SUB CARRIER OSCILLATOR
Q40
X3
R231
C167
R231 COLOR LEVEL
C167 FSC
D11
D10
R166
R164
R164, R166 BURST LEVEL (1), (2)
IC29
IC28
AUDIO MUTE
Q47
BUF
IC47
IC48
IC45
Q44
Q45
Q48
ES
CN2
MAC AUDIO OUT(L)
MAC AUDIO OUT(R)
TO 1 0 AV IN/OUT CN4
CN7
AUDIO OUT(CH-3)
BIL CTL OUT
TO 9 6 AUDIO CN8
I
J
K
L
3-21
3-22
N
O
P

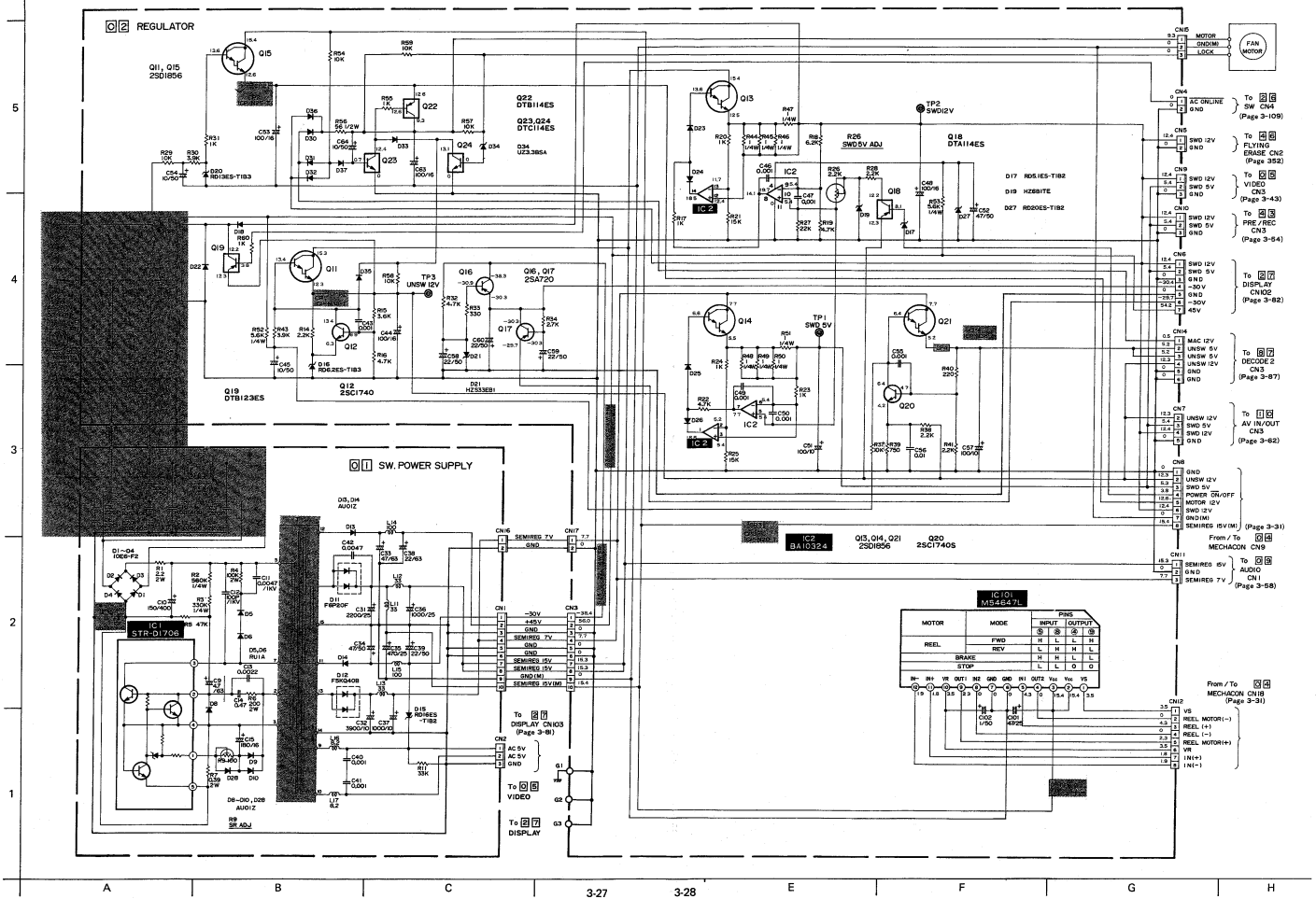
3.10 VPT BLOCK DIAGRAM



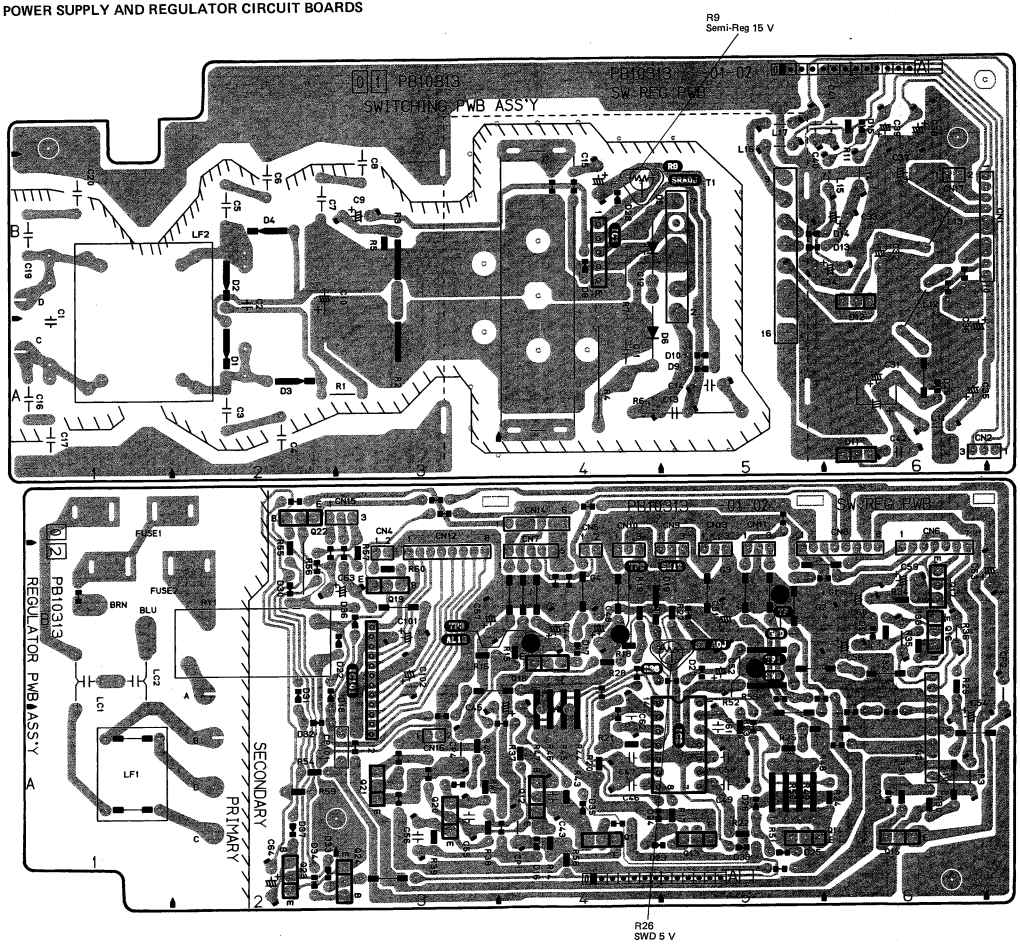
3.11 POWER SYSTEM BLOCK DIAGRAM



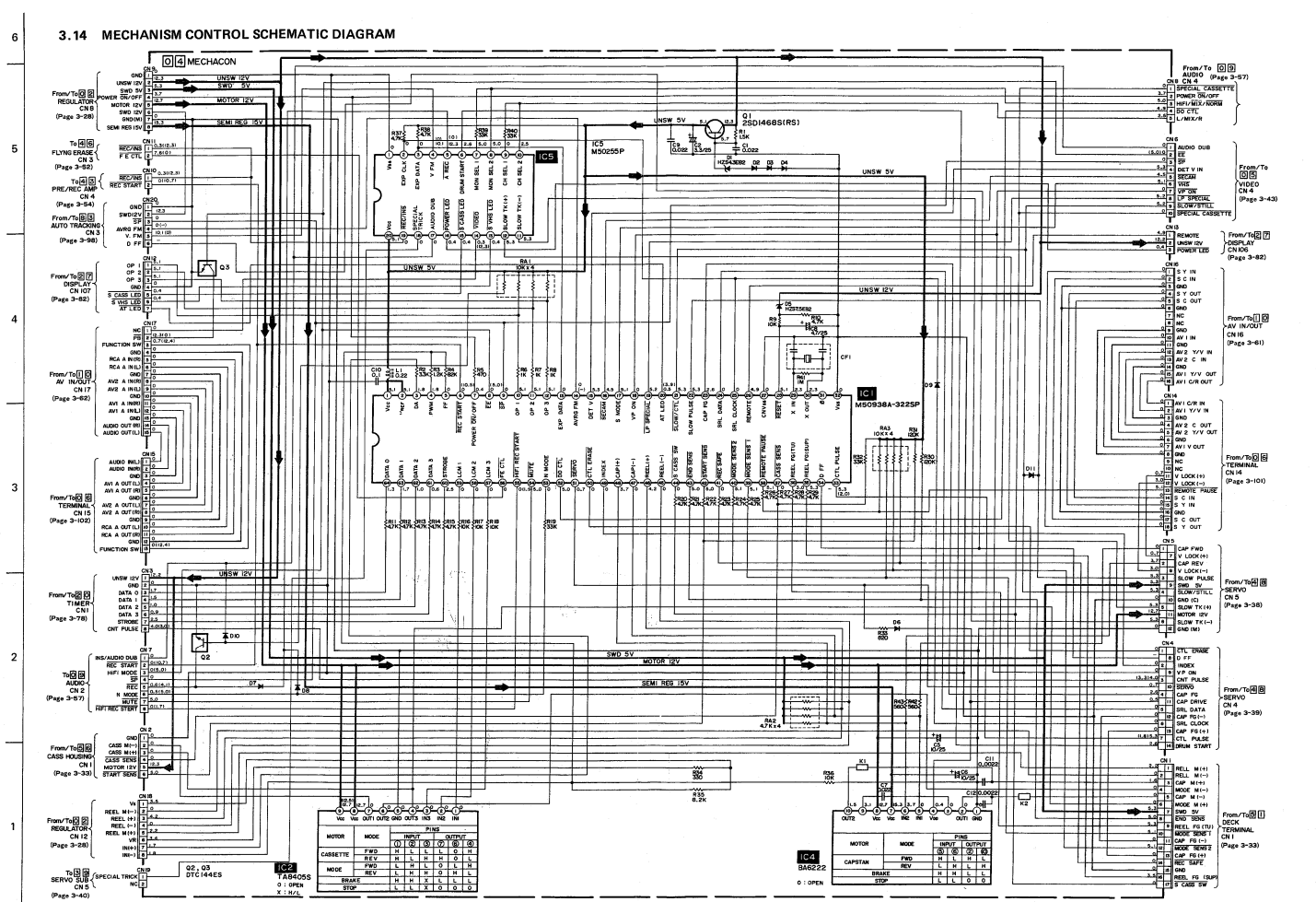
3.12 SWITCHING POWER SUPPLY AND REGULATOR SCHEMATIC DIAGRAMS



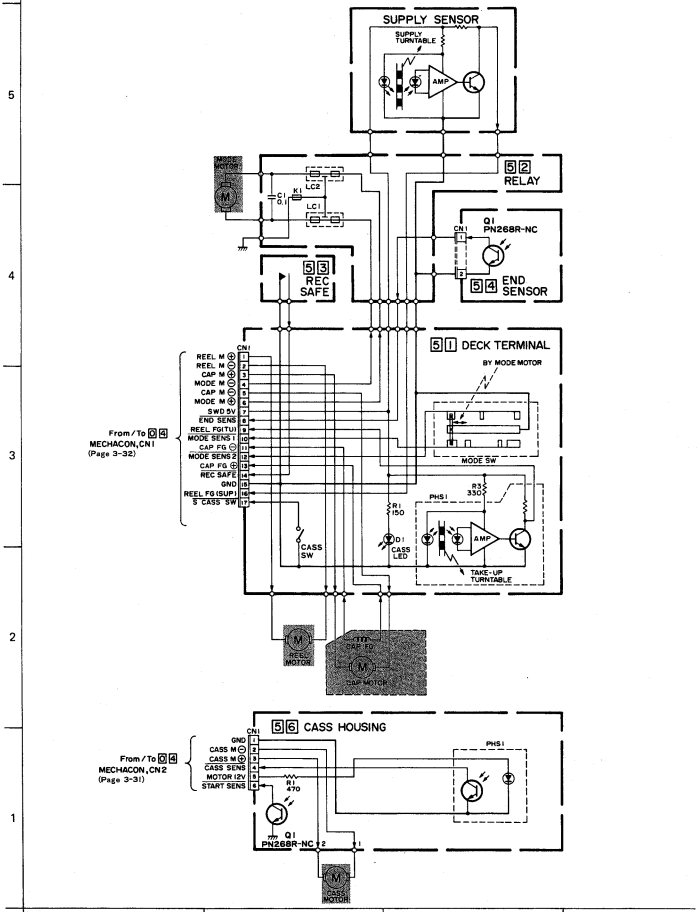
3.13 SWITCHING POWER SUPPLY AND REGULATOR CIRCUIT BOARDS



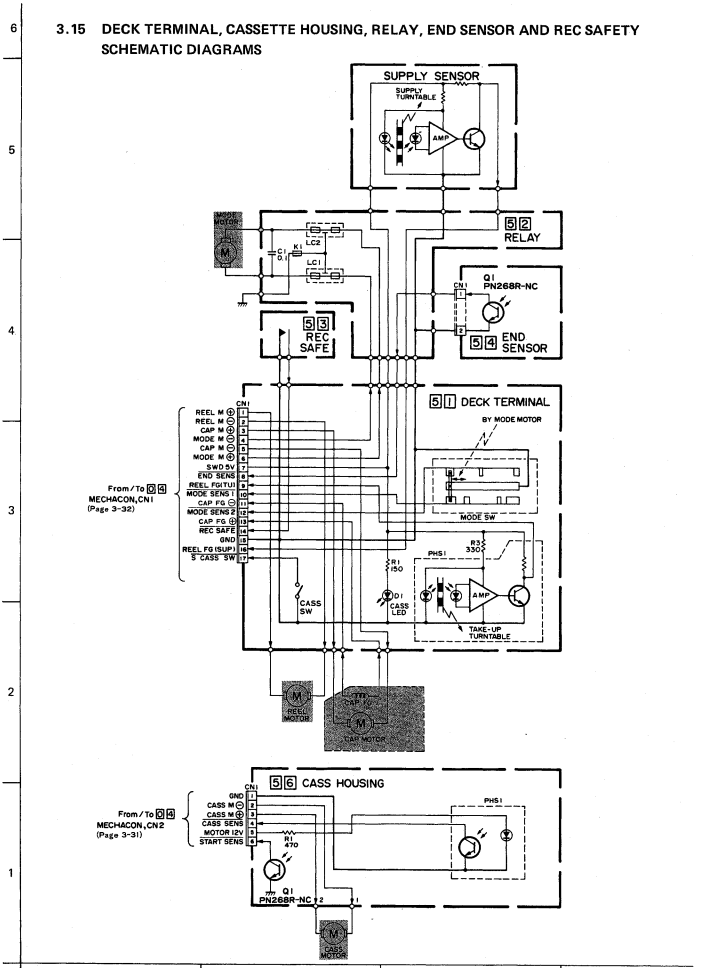
3.14 MECHANISM CONTROL SCHEMATIC DIAGRAM



3.15 DECK TERMINAL, CASSETTE HOUSING, RELAY, END SENSOR AND REC SAFETY SCHEMATIC DIAGRAMS

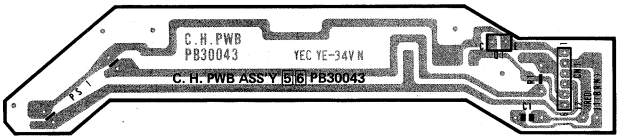


3.15 DECK TERMINAL, CASSETTE HOUSING, RELAY, END SENSOR AND REC SAFETY SCHEMATIC DIAGRAMS



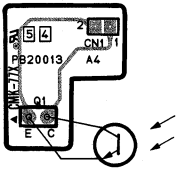
3.16 DECK TERMINAL, CASSETTE HOUSING, RELAY, END SENSOR AND REC SAFETY CIRCUIT BOARDS

– CASSETTE HOUSING –

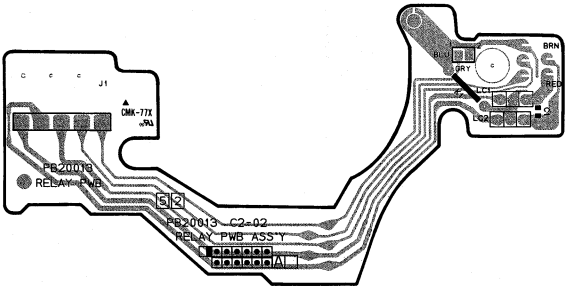


– REC SAFETY –

– END SENSOR –

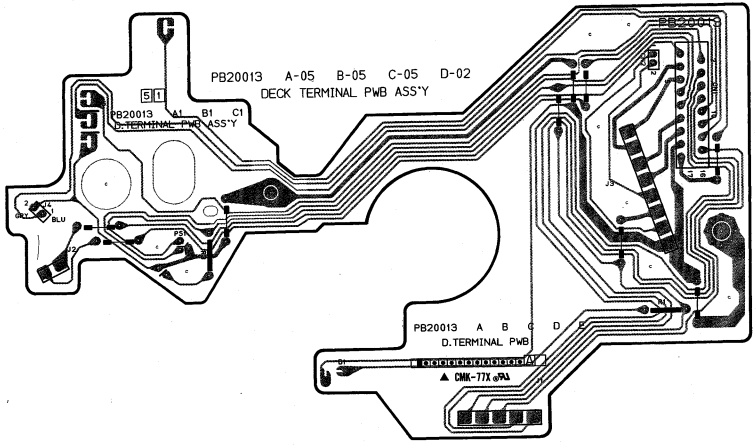


– RELAY –

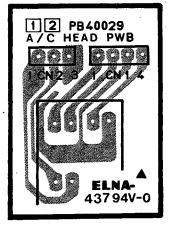


3.17 MECHANISM CONTROL AND AUDIO CONTROL HEAD CIRCUIT BOARDS

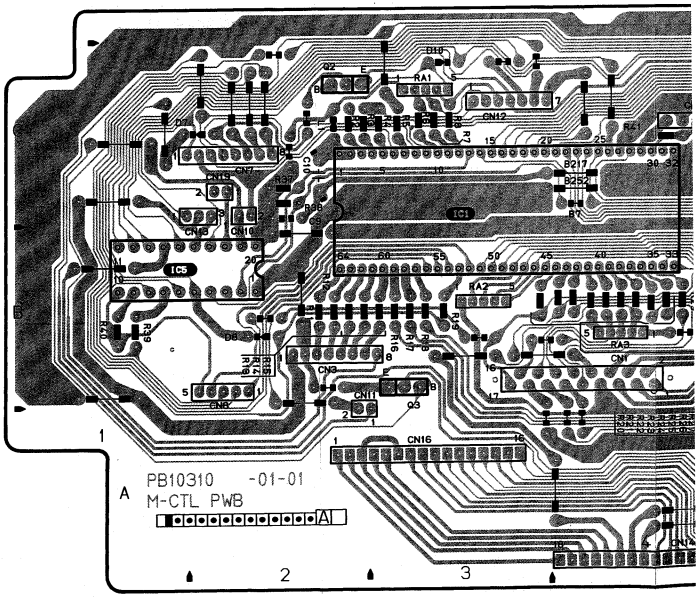
– DECK TERMINAL –



– A/C HEAD –



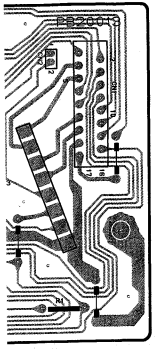
– MECHACON –

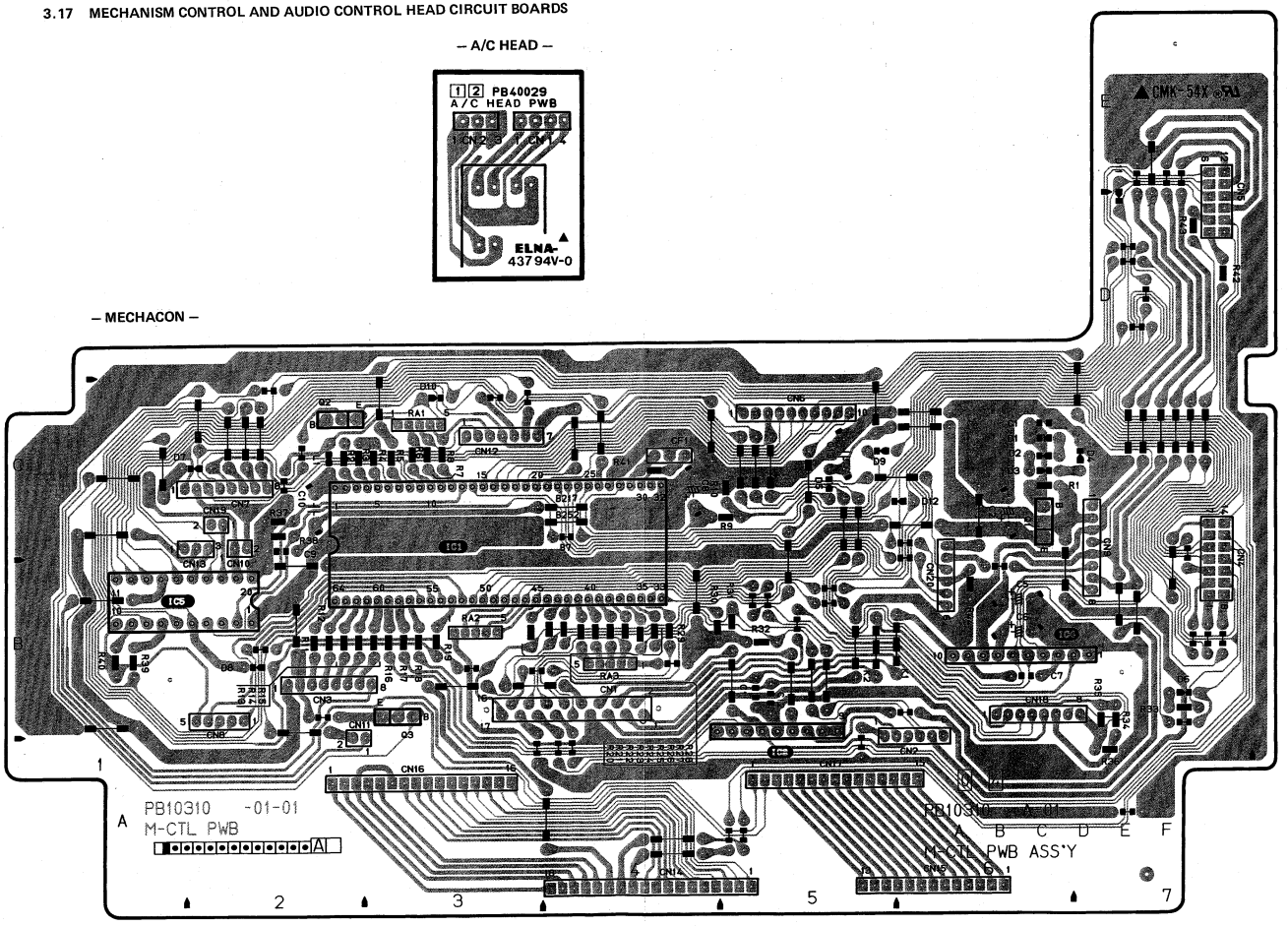


3.17 MECHANISM CONTROL AND AUDIO CONTROL HEAD CIRCUIT BOARDS

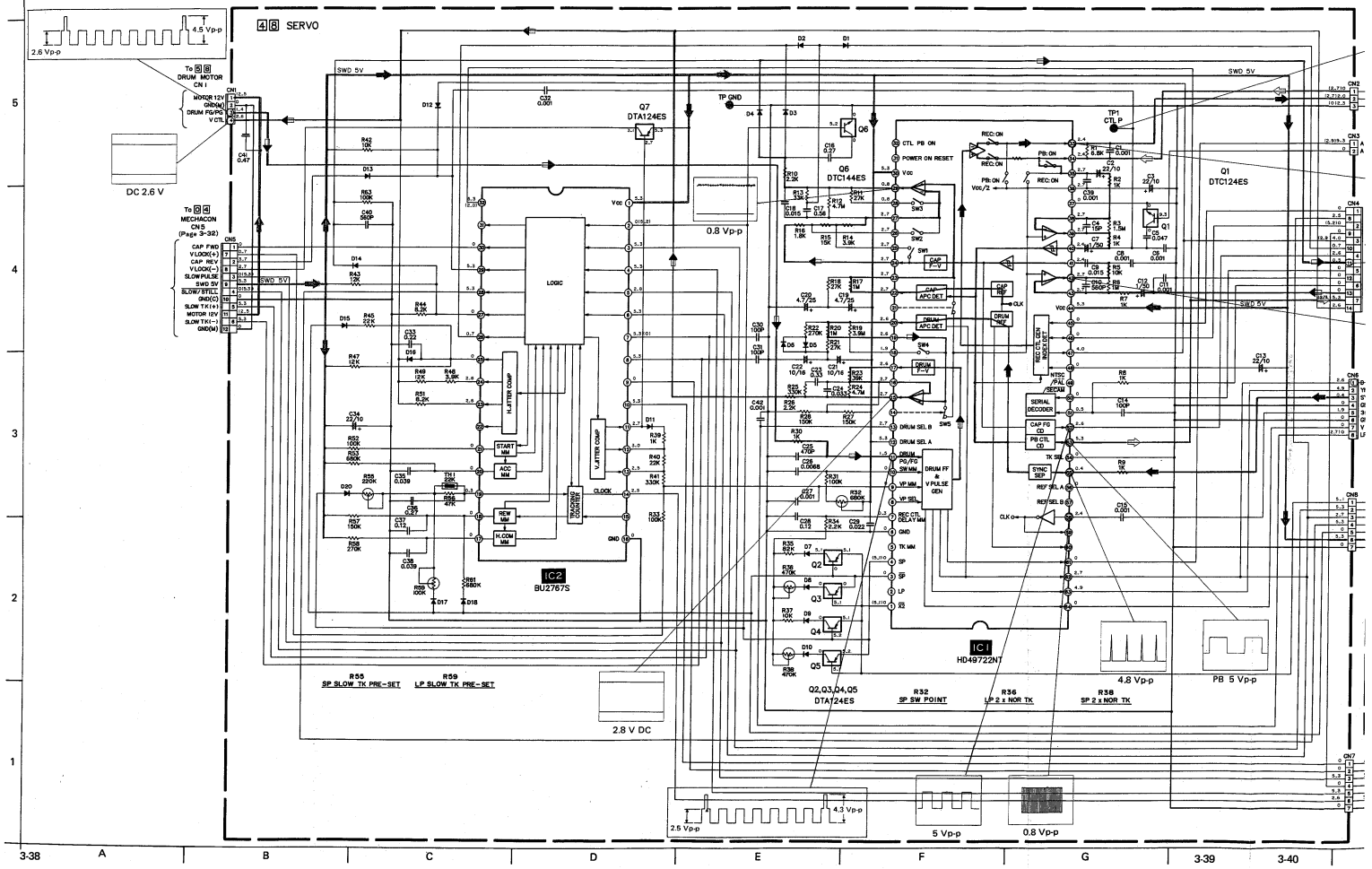
– A/C HEAD –

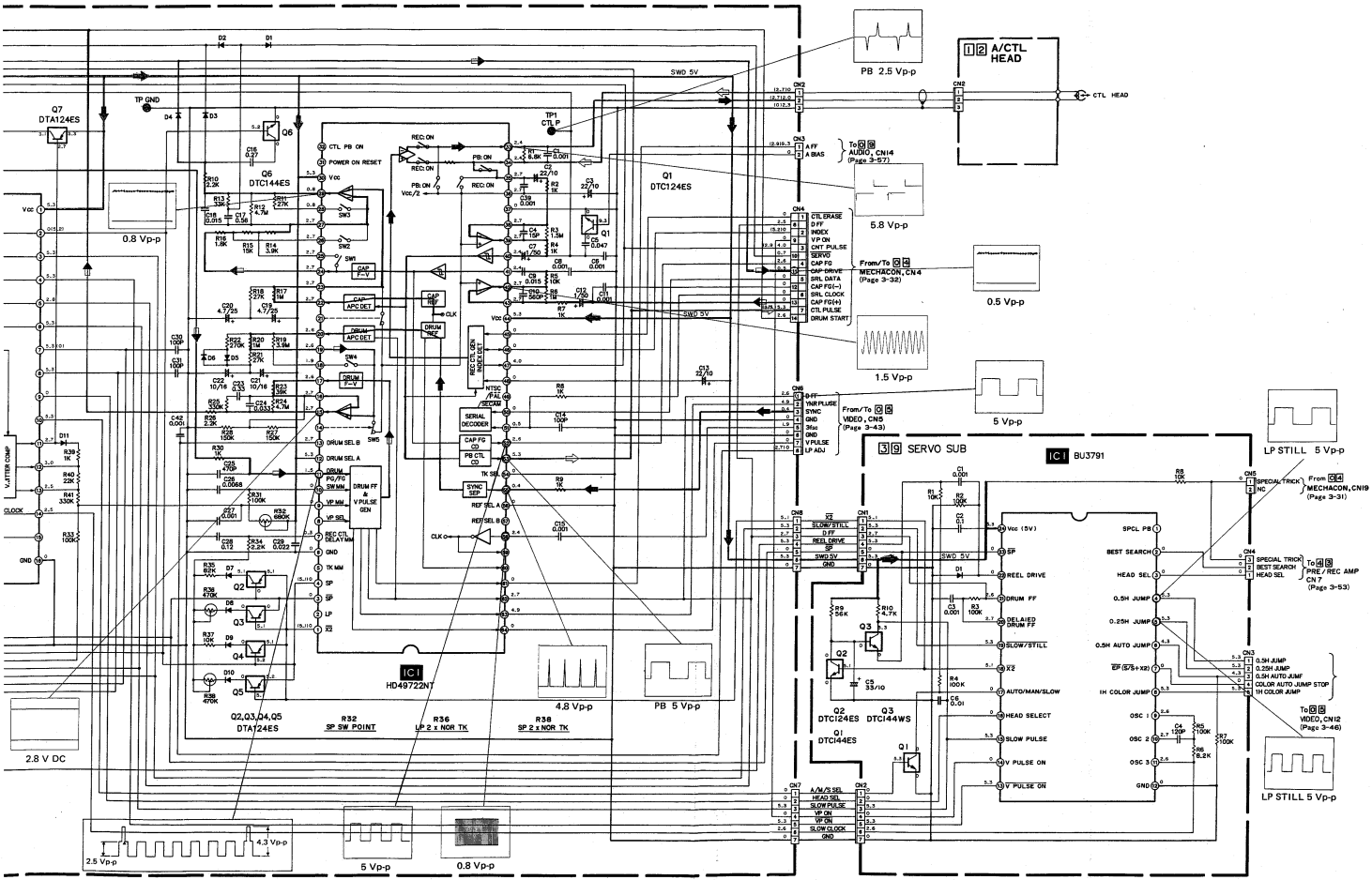
– MECHACON –

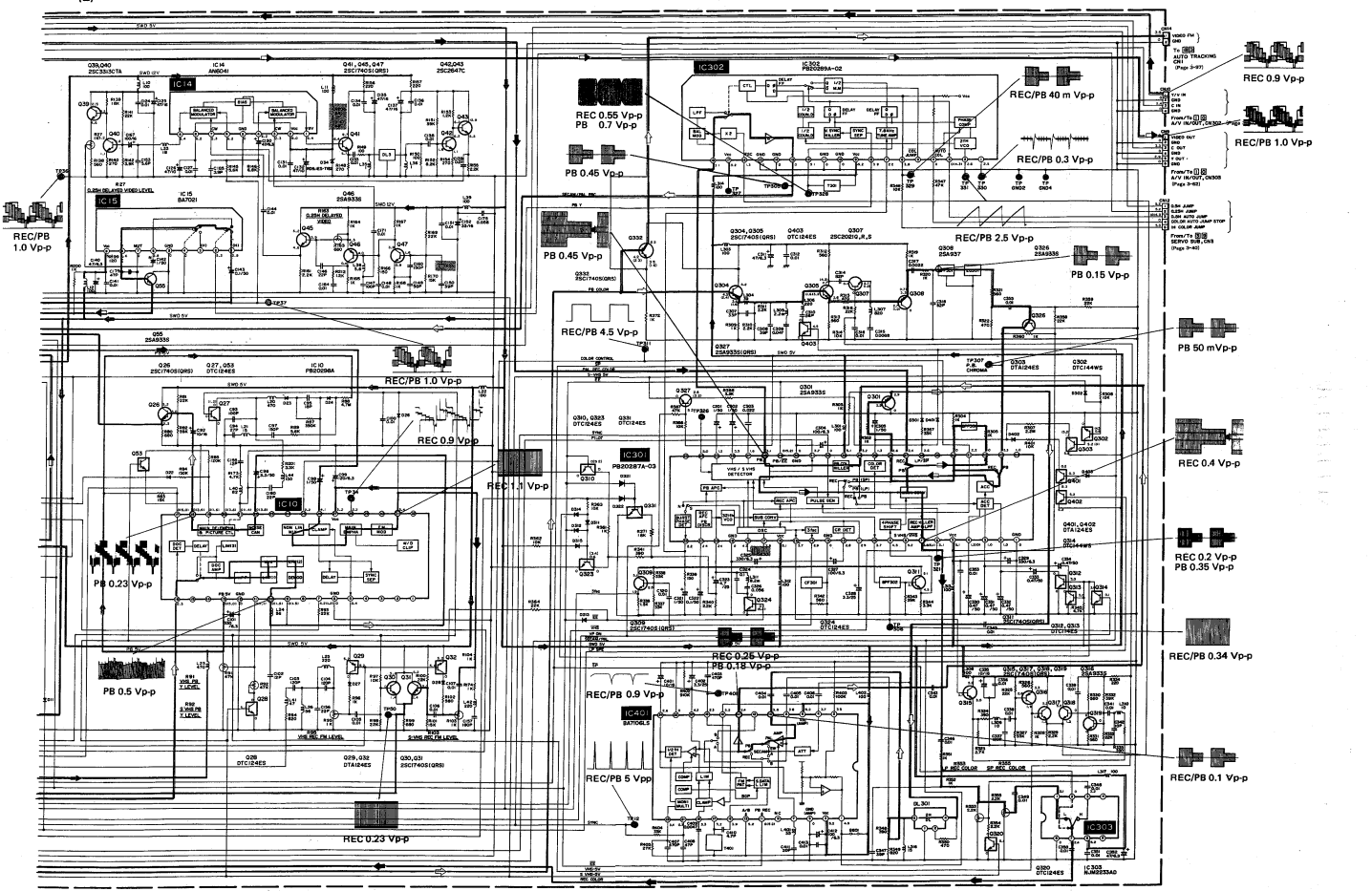


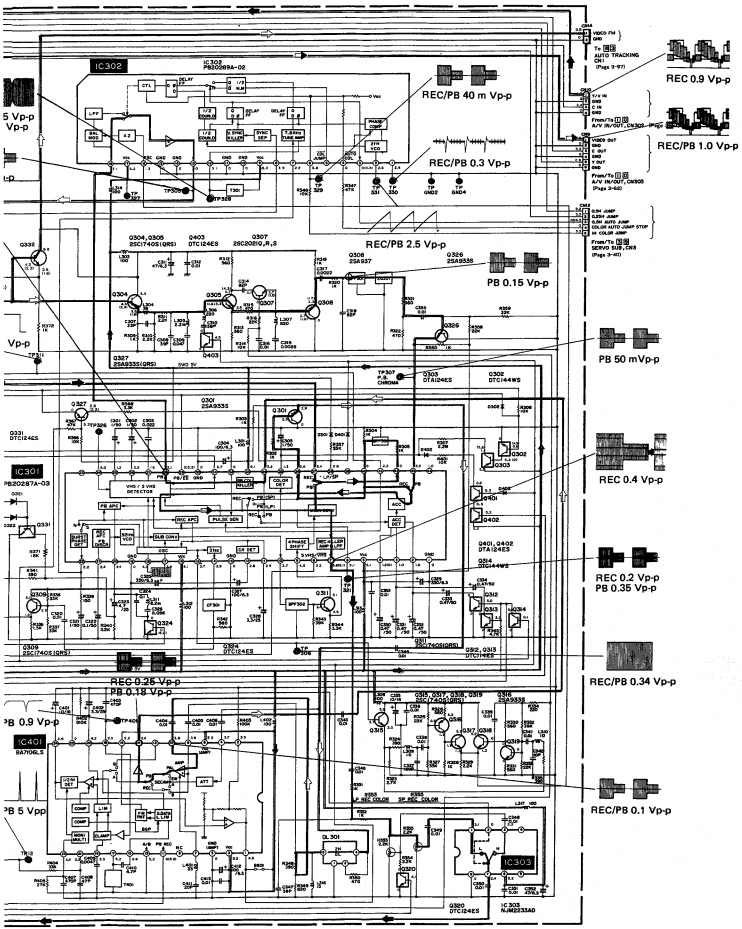


3.18 SERVO AND SERVO SUB SCHEMATIC DIAGRAM

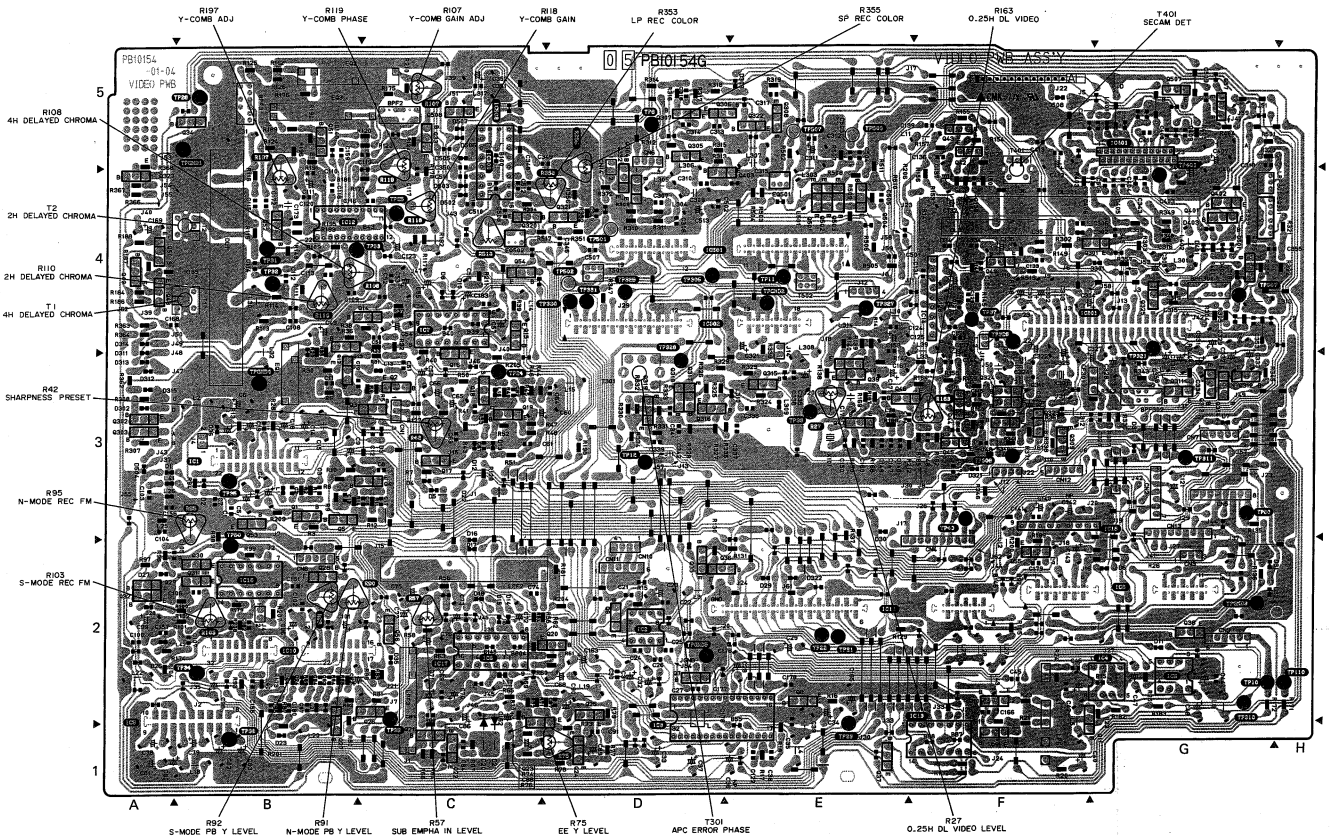


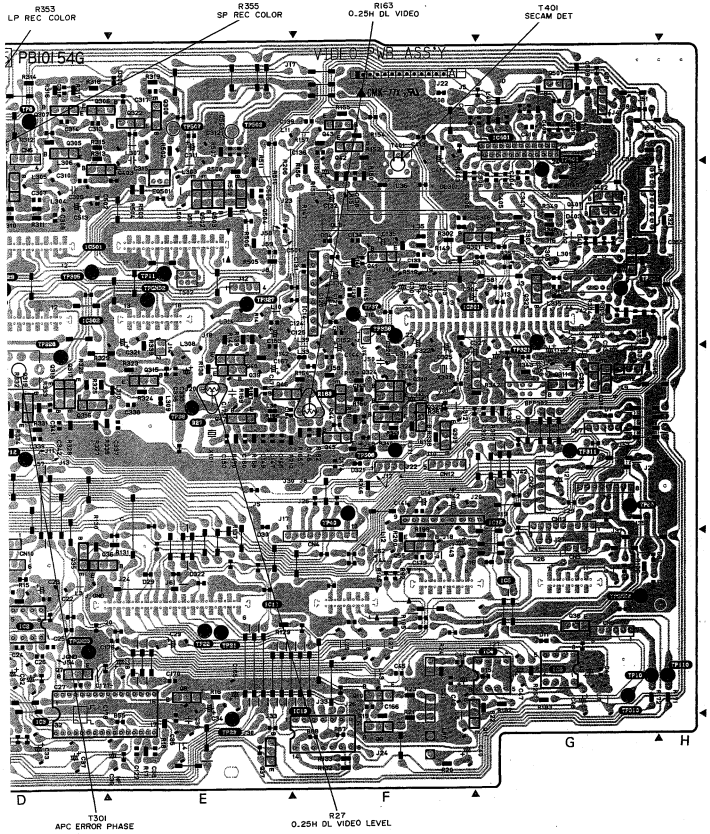

A/CTL HEAD
CTL HEAD
PB 2.5 Vp-p
5.8 Vp-p
0.5 Vp-p
1.5 Vp-p
5 Vp-p
0.8 Vp-p
2.8 V DC
4.8 Vp-p
PB 5 Vp-p
2.5 Vp-p
4.3 Vp-p
5 Vp-p
0.8 Vp-p
LP STILL 5 Vp-p
LP STILL 5 Vp-p
SERVO SUB
IC1 BU3791
IC1 HD49722NT
Q1 DTC124ES
Q6 DTC144ES
Q7 DTA124ES
Q2,Q3,Q4,Q5 DTA124ES
Q2 DTC124ES
Q3 DTC144WS
Q1 DTC144ES
R32 SP SW POINT
R36 LP 2 x NOR TK
R38 SP 2 x NOR TK
To/From CN3 AUDIO, CN14 (Page 3-57)
From/To CN4 MECHACON, CN4 (Page 3-32)
From/To CN5 VIDEO, CN5 (Page 3-43)
From CN4 MECHACON, CN19 (Page 3-31)
To CN4 PRE/REC AMP CN7 (Page 3-53)
To CN3 VIDEO, CN12 (Page 3-46)
3-39
3-40


IC14
IC15
IC16
IC10
IC301
IC302
IC303
IC401
REC 0.55 Vp-p
PB 0.7 Vp-p
PB 0.45 Vp-p
REC/PB 40 m Vp-p
REC/PB 0.3 Vp-p
REC/PB 2.5 Vp-p
PB 0.15 Vp-p
REC/PB 4.5 Vp-p
REC/PB 1.0 Vp-p
REC 0.9 Vp-p
REC 1.1 Vp-p
PB 0.23 Vp-p
PB 0.5 Vp-p
REC 0.23 Vp-p
REC 0.26 Vp-p
PB 0.15 Vp-p
REC/PB 0.9 Vp-p
REC/PB 5 Vpp
REC 0.9 Vp-p
REC/PB 1.0 Vp-p
PB 50 mVp-p
REC 0.4 Vp-p
REC 0.2 Vp-p
PB 0.35 Vp-p
REC/PB 0.34 Vp-p
REC/PB 0.1 Vp-p


IC302
REC/PB 40 m Vp-p
REC/PB 0.3 Vp-p
REC/PB 2.5 Vp-p
PB 0.15 Vp-p
PB 50 mVp-p
REC 0.4 Vp-p
REC 0.2 Vp-p
PB 0.35 Vp-p
REC/PB 0.34 Vp-p
REC/PB 0.1 Vp-p
REC 0.9 Vp-p
REC/PB 1.0 Vp-p
IC301
IC401
IC303
REC 0.25 Vp-p
PB 0.18 Vp-p
PB 0.9 Vp-p
PB 5 Vpp

3.21 VIDEO CIRCUIT BOARD





IC	
SYMBOL No.	ADDRESS No.
IC2	2-D
IC3	2-D
IC4	2-G
IC5	2-G
IC6	2-G
IC7	4-C
IC8	2-C
IC9	2-B
IC10	2-B
IC11	2-E
IC12	4-B
IC13	1-F
IC14	4-F
IC15	3-F
IC16	2-B
IC301	4-G
IC302	4-D
IC303	5-C
IC401	5-G

TRANSISTOR(Q)	
SYMBOL No.	ADDRESS No.
Q1	3-B
Q2	3-C
Q3	3-C
Q4	3-C
Q5	3-B
Q6	2-D
Q7	2-D
Q8	2-E
Q9	1-F
Q10	2-F
Q11	1-F
Q12	3-B
Q13	4-B
Q14	4-C
Q15	4-C
Q16	4-C
Q17	3-C
Q18	3-C
Q19	3-C
Q20	2-D
Q21	1-C
Q22	1-C
Q23	1-C
Q24	1-D
Q25	2-D
Q26	2-C
Q27	1-B
Q28	2-B
Q29	2-A
Q30	2-B
Q31	2-B
Q32	2-A
Q33	5-C
Q34	5-B
Q35	2-D
Q36	2-D
Q37	1-E
Q38	2-G
Q39	3-E
Q40	3-E

TRANSISTOR(Q)	
SYMBOL No.	ADDRESS No.
Q41	4-F
Q42	5-F
Q43	5-F
Q45	3-F
Q46	3-E
Q47	3-E
Q48	4-A
Q49	4-A
Q50	4-A
Q51	5-B
Q52	4-B
Q53	3-B
Q54	4-C
Q55	2-F
Q318	3-D
Q319	3-D
Q320	4-C
Q323	3-F
Q324	3-F
Q326	4-G
Q327	4-A
Q332	4-D
Q401	4-G
Q402	4-G
Q403	4-D

DIODE(D)	
SYMBOL No.	ADDRESS No.
D1	3-A
D3	3-C
D4	3-C
D5	3-C
D6	2-G
D7	3-G
D8	4-C
D10	4-C
D11	2-G
D12	3-C
D13	3-C
D16	2-C
D17	2-C
D18	2-C
D20	1-C
D21	2-C
D22	3-C
D23	1-B
D26	2-A
D27	2-A
D28	2-A
D29	2-E
D31	2-G
D32	2-G
D34	4-F
D301	4-G
D302	3-A
D303	5-E
D311	4-A
D312	3-A
D313	3-A
D314	4-A
D315	3-A
D321	3-F

DIODE(D)	
SYMBOL No.	ADDRESS No.
D322	2-E
D401	4-G
D402	4-G
D403	4-G

COIL(L)	
SYMBOL No.	ADDRESS No.
L2	3-B
L3	2-D
L4	1-E
L5	1-F
L6	2-G
L7	2-F
L8	2-G
L9	2-G
L10	4-E
L11	5-F
L12	2-F
L13	3-C
L14	4-C
L15	3-D
L16	2-C
L17	2-C
L18	1-B
L19	2-D
L20	1-B
L21	2-B
L22	2-A
L23	2-C
L24	2-B
L25	3-A
L26	3-A
L27	2-F
L28	2-F
L29	2-F
L30	4-B
L31	5-B
L32	4-B
L33	3-F
L35	4-F
L36	4-F
L38	3-E
L39	4-F
L40	2-B
L41	3-A
L42	2-A
L43	2-F
L44	2-B
L301	4-G
L302	4-F
L303	4-E
L304	4-D
L305	4-D
L306	4-D
L307	5-E
L308	4-E
L309	3-E
L310	3-E
L311	3-F
L312	3-F
L313	4-G
L314	4-E

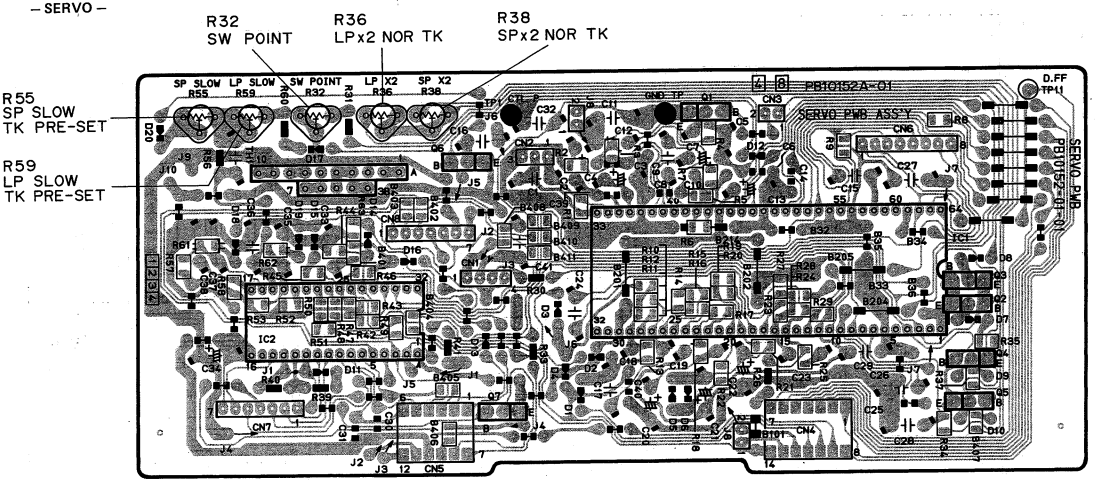
COIL(L)	
SYMBOL No.	ADDRESS No.
L316	4-G
L317	5-C
L318	4-G
L401	5-G
L402	4-G

TEST PIN(TP)	
SYMBOL No.	ADDRESS No.
TP6	5-D
TP10	2-G
TP11	4-E
TP12	3-D
TP21	2-E
TP22	2-E
TP23	1-E
TP24	3-C
TP25	4-C
TP26	5-B
TP31	4-B
TP32	4-B
TP33	4-B
TP34	2-B
TP35	3-B
TP36	3-E
TP37	4-F
TP38	1-B
TP39	2-C
TP40	3-F
TP50	2-B
TP60	3-G
TP110	2-H
TP305	4-D
TP306	3-F
TP307	4-G
TP310	2-G
TP311	3-G
TP321	4-G
TP326	4-F
TP327	4-E
TP328	3-D
TP329	4-D
TP330	4-D
TP331	4-D
TP401	4-G
TP501	4-D
TP502	4-D
TP503	5-E
TP507	5-F
TP GND1	5-B
TP GND2	4-E
TP GND3	2-G
TP GND4	3-B
TP GND5	2-D

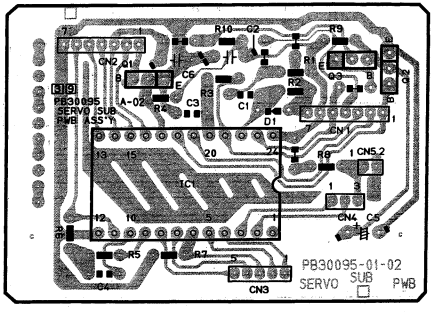
CONNECTOR(CN)	
SYMBOL No.	ADDRESS No.
CN1	3-C
CN2	3-G
CN3	2-G
CN4	2-F
CN5	3-G
CN6	5-D
CN7	3-G
CN8	2-B
CN9	2-G
CN10	2-D
CN12	3-F
CN14	5-D

3.19 SERVO AND SERVO SUB CIRCUIT BOARDS

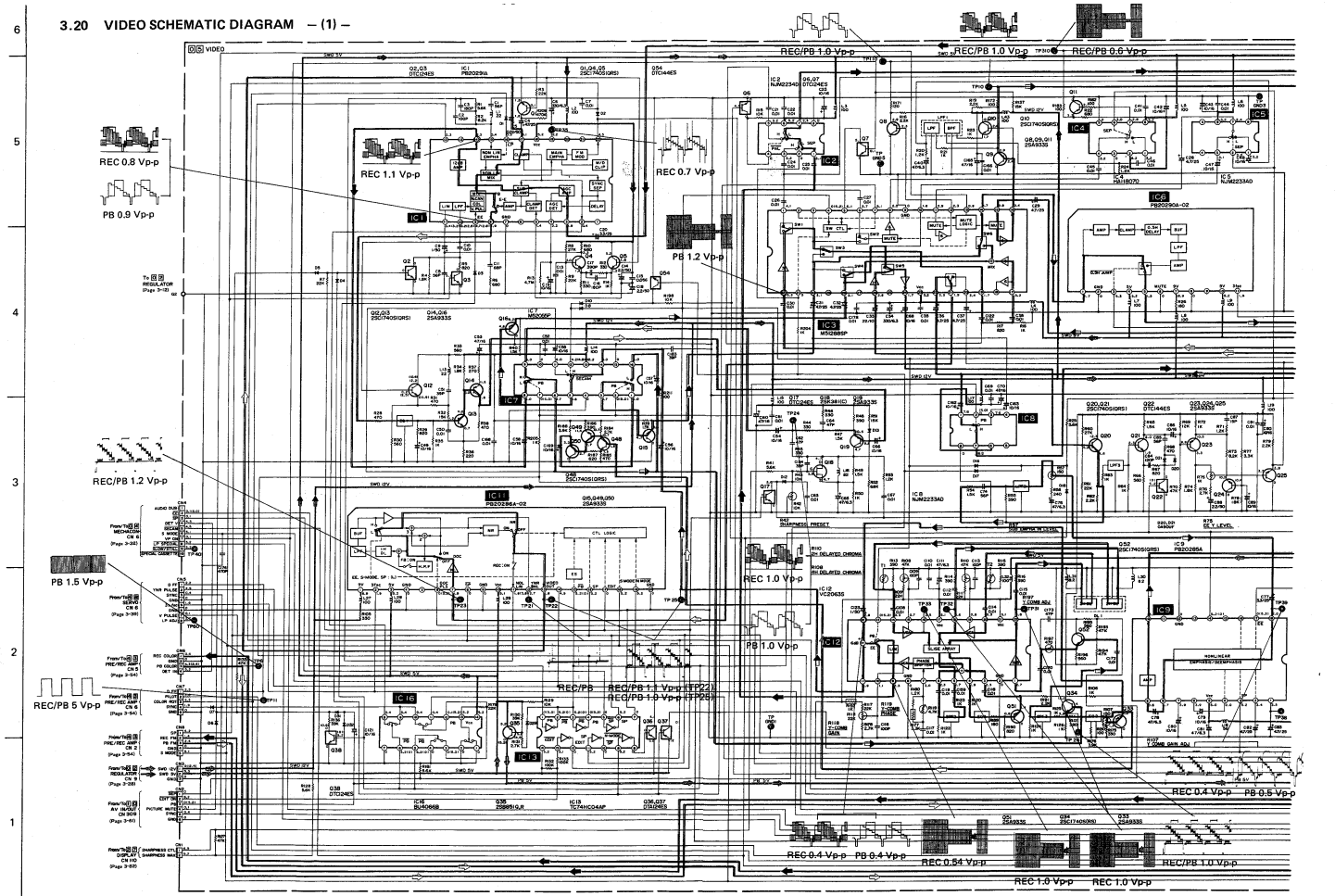
– SERVO –



– SERVO SUB –

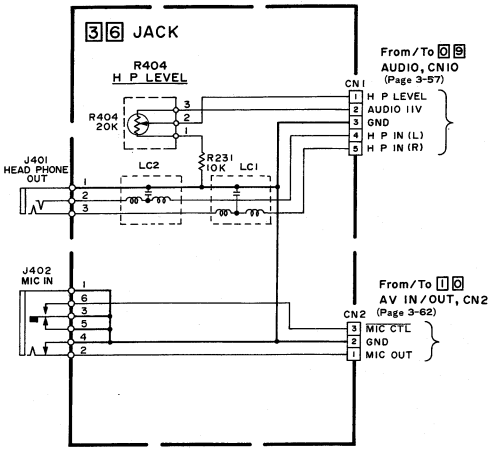


3.20 VIDEO SCHEMATIC DIAGRAM – (1) –

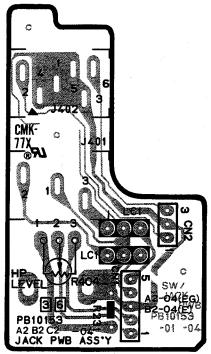


3.22 JACK SCHEMATIC DIAGRAM AND CIRCUIT BOARD

– SCHEMATIC DIAGRAM –

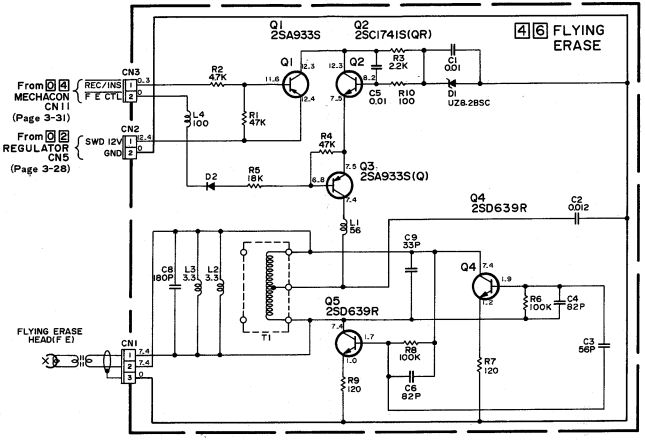


– CIRCUIT BOARD –

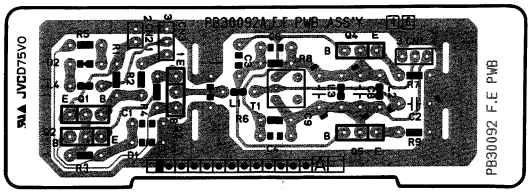


3.23 FLYING ERASE DIAGRAM AND CIRCUIT BOARD

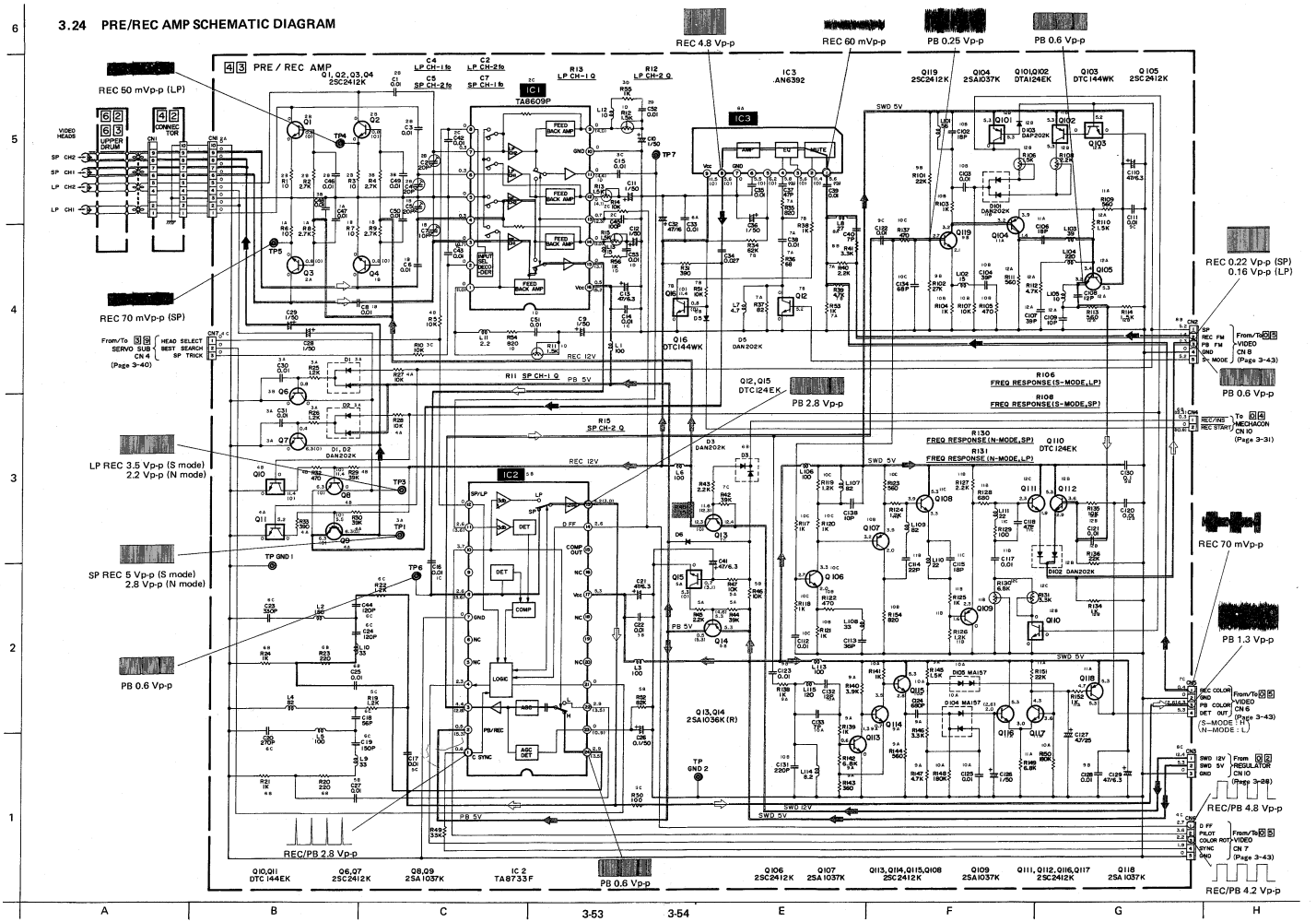
– SCHEMATIC DIAGRAM –



– CIRCUIT BOARD –

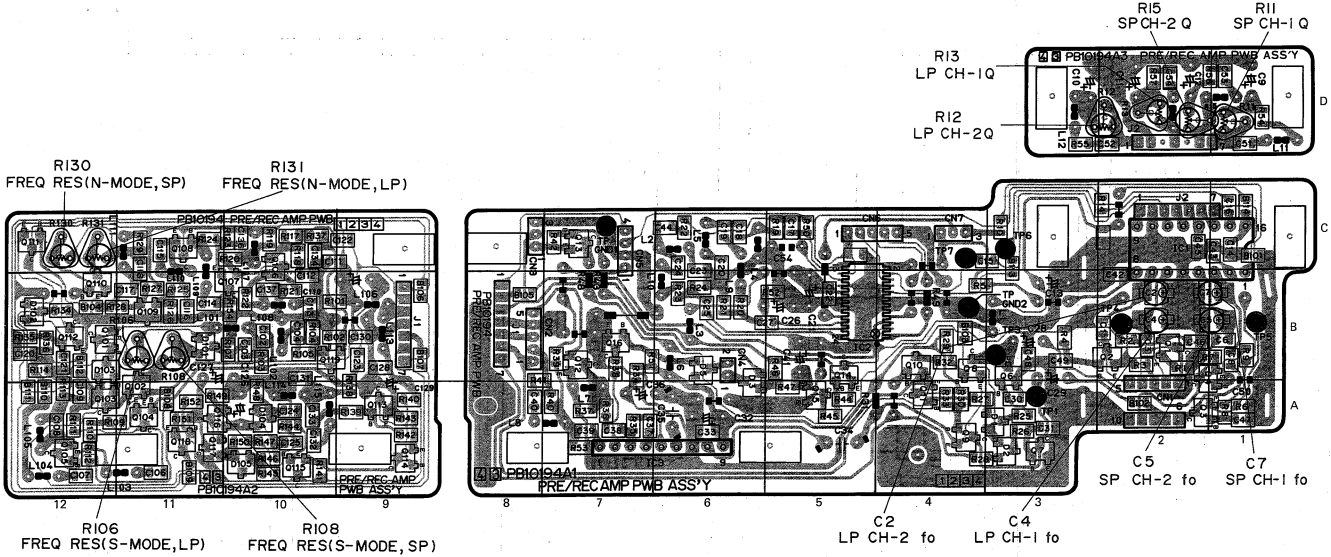


3.24 PRE/REC AMP SCHEMATIC DIAGRAM

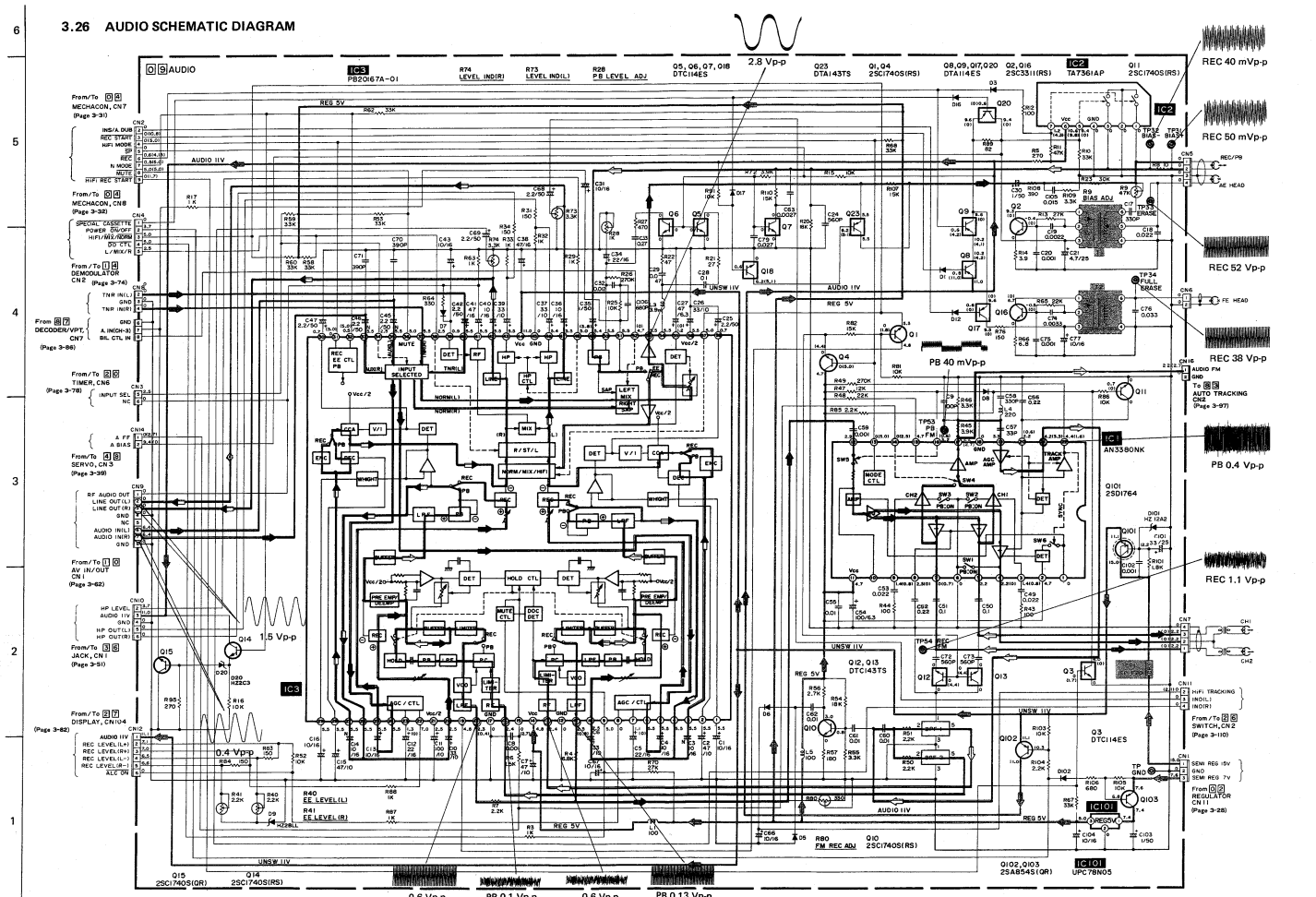


3.25 PRE/REC AMP CIRCUIT BOARD

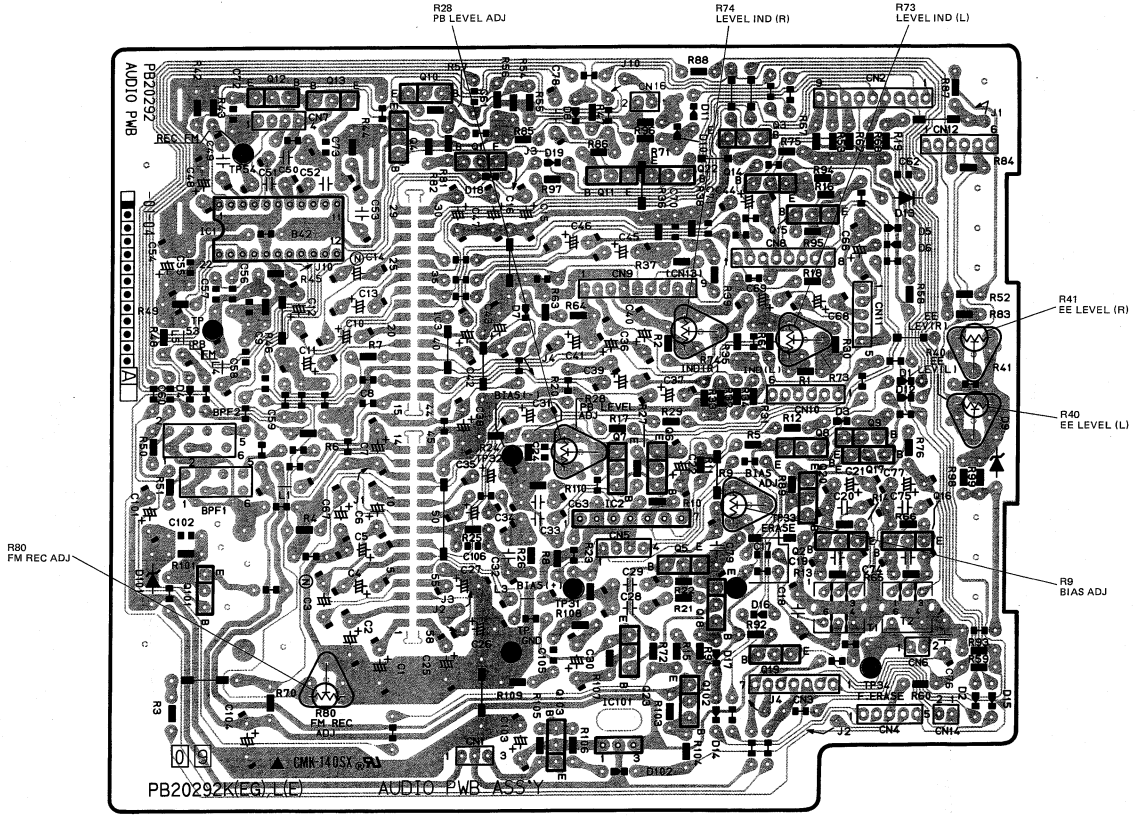
Note: Double edging indicates not used in this model.
Examples; Resistor, Capacitor, Transistor, DIODE



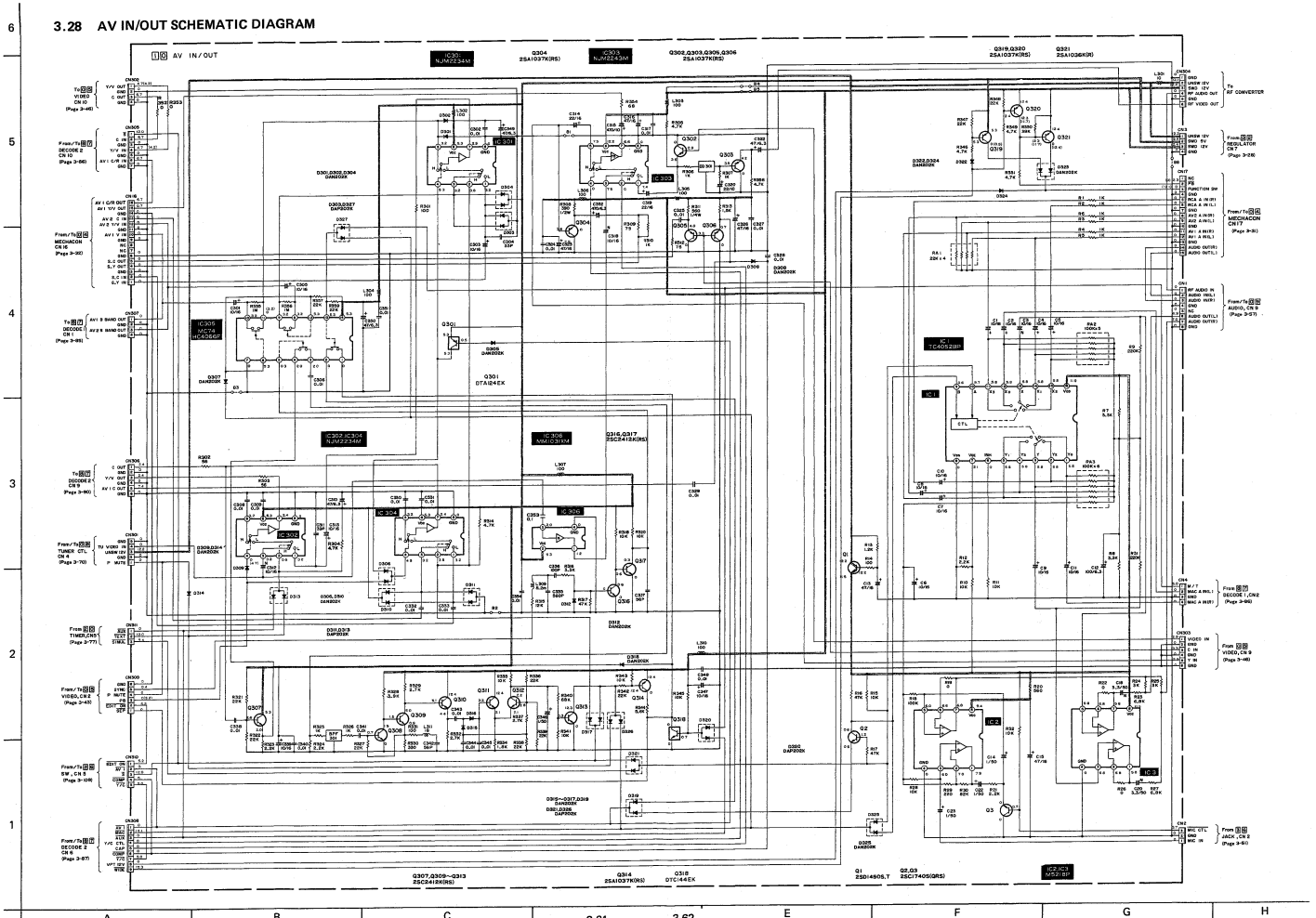
3.26 AUDIO SCHEMATIC DIAGRAM



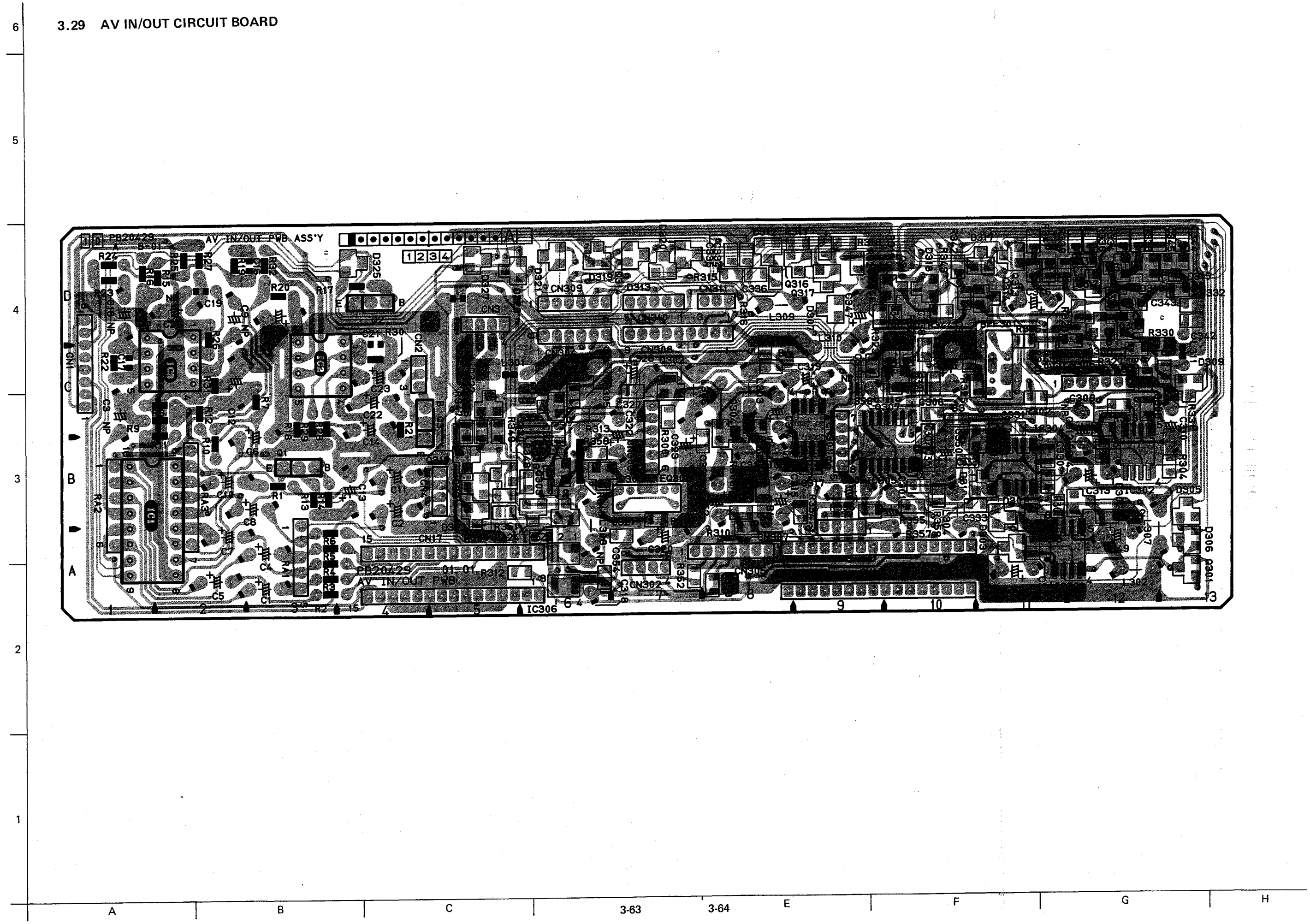
3.27 AUDIO CIRCUIT BOARD



3.28 AV IN/OUT SCHEMATIC DIAGRAM

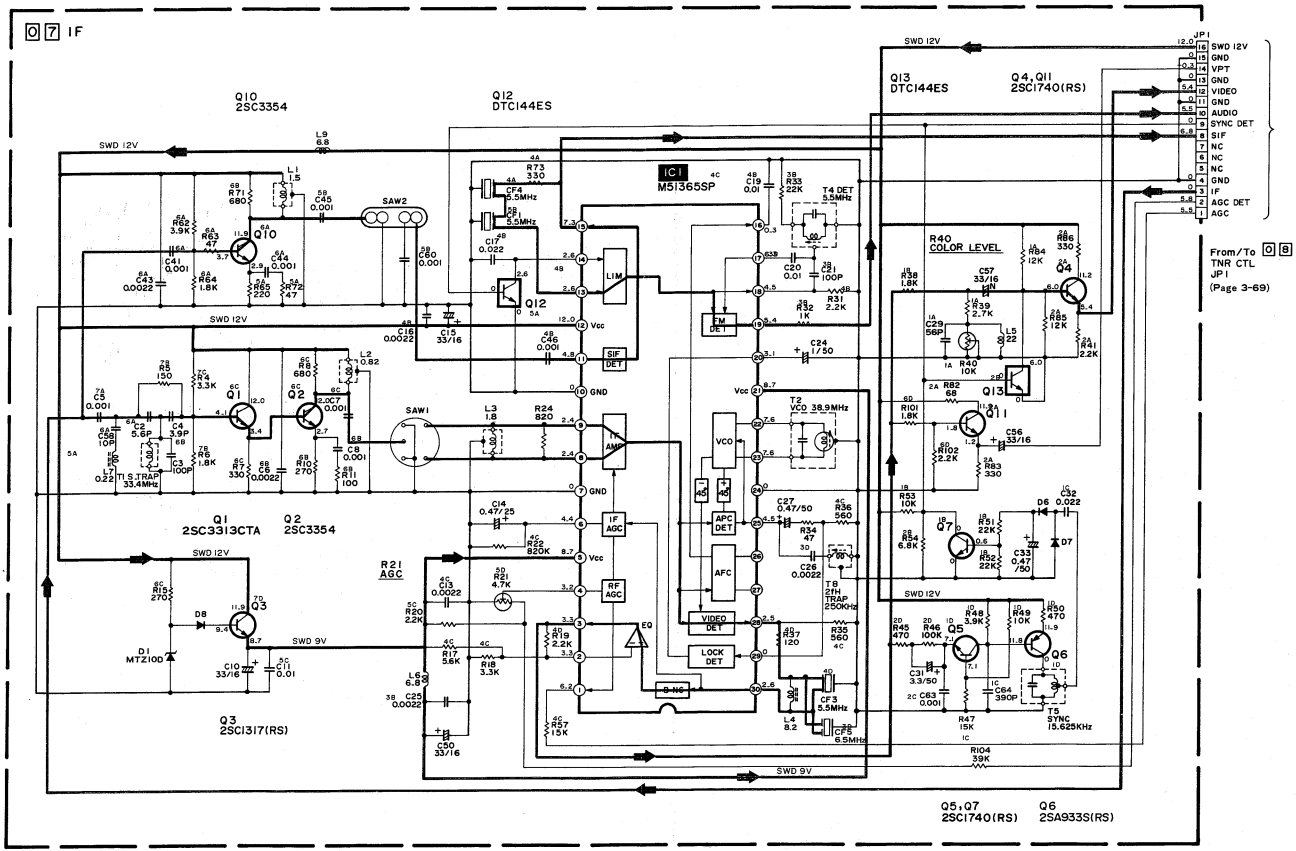


3.29 AV IN/OUT CIRCUIT BOARD



3-63 3-64

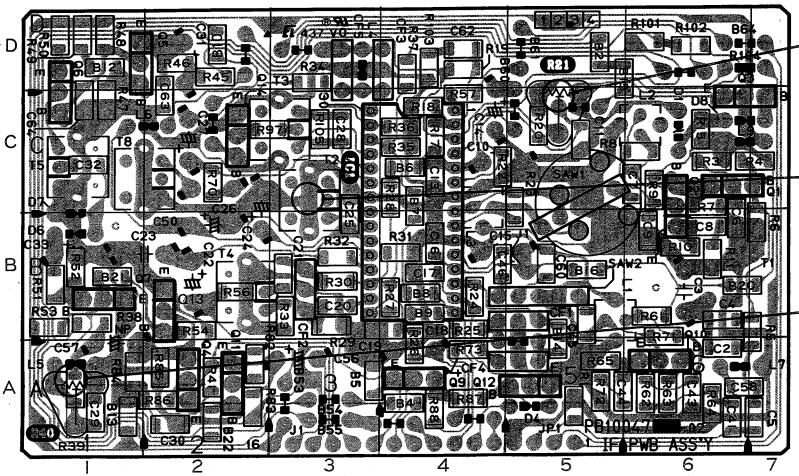
3.30 IF SCHEMATIC DIAGRAM



Note: Voltages are DC-measured with a digital voltmeter during stop and tuner mode. (3 ch)

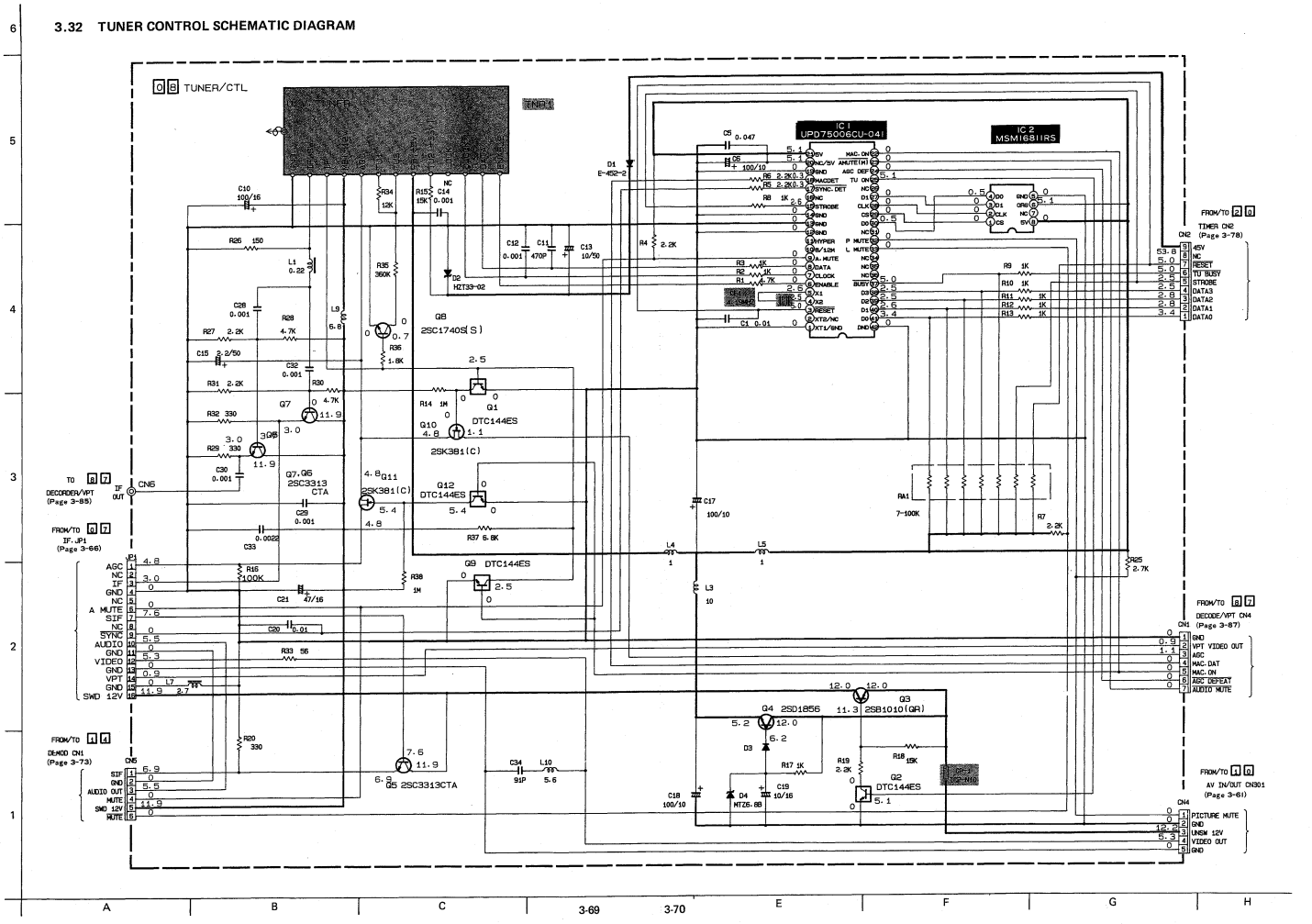
3.31 IF CIRCUIT BOARD

Note: Double edging indicates not used in this model.
Examples; Resistor, Capacitor, Transistor, DIODE

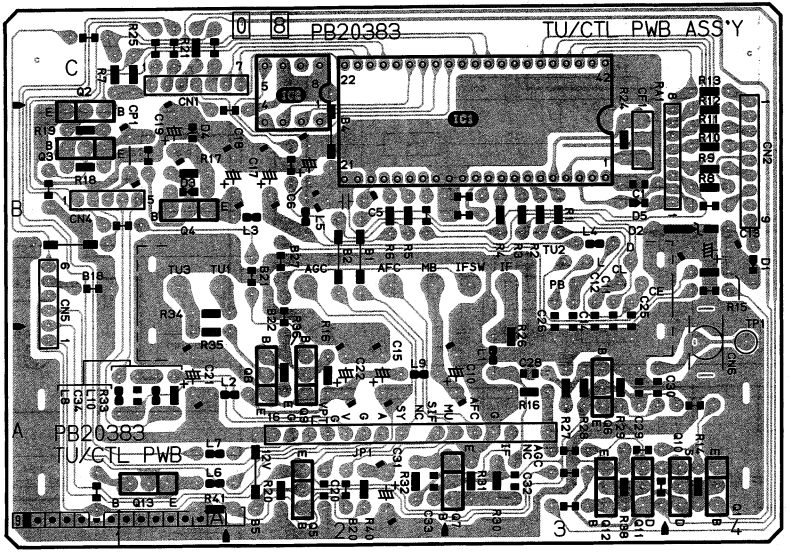


IF PWB	**PB10047-01-03**
IF PWB ASS'Y	**PB10047AL**

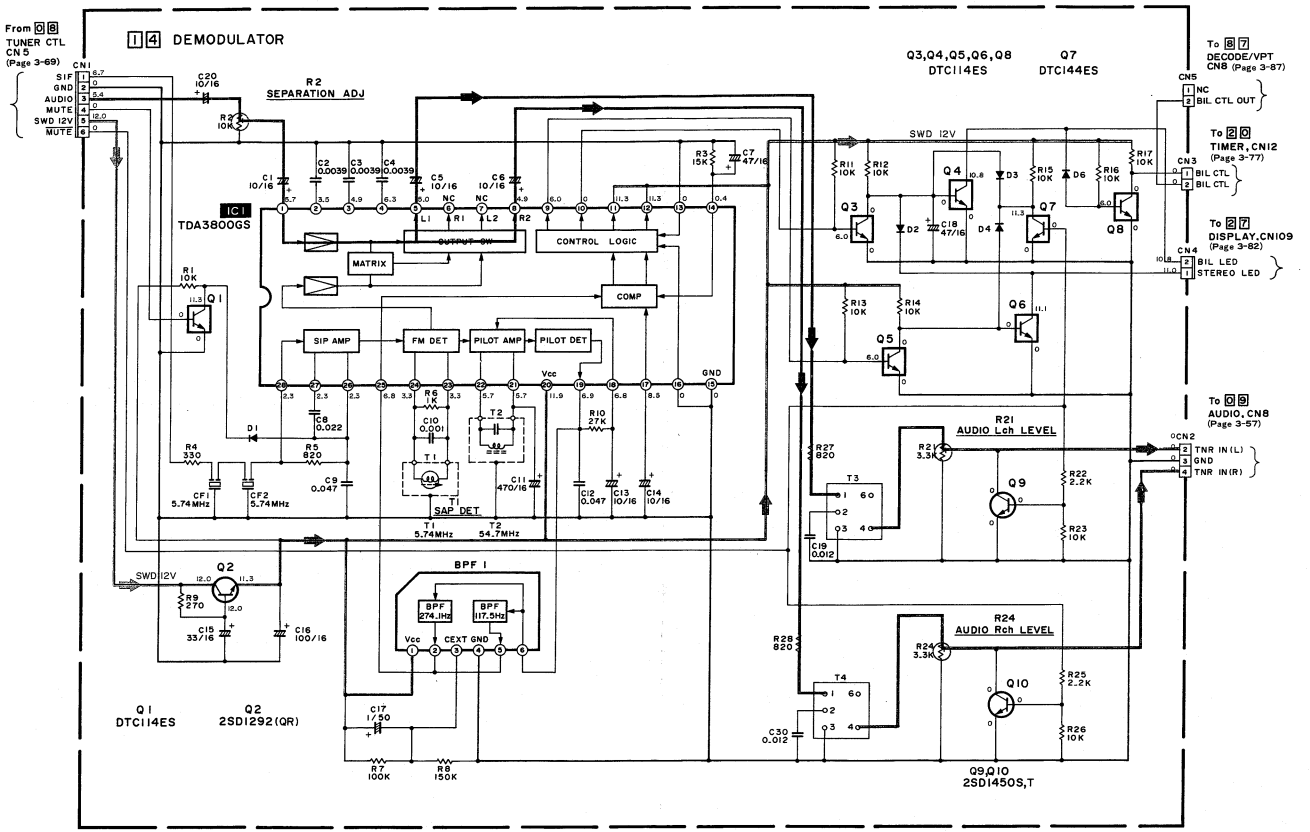
3.32 TUNER CONTROL SCHEMATIC DIAGRAM



3.33 TUNER CONTROL CIRCUIT BOARD

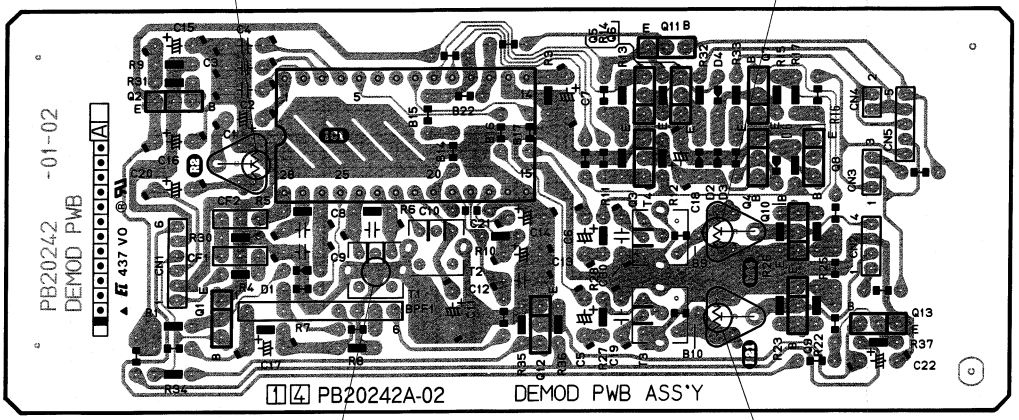


3.34 DEMODULATOR SCHEMATIC DIAGRAM

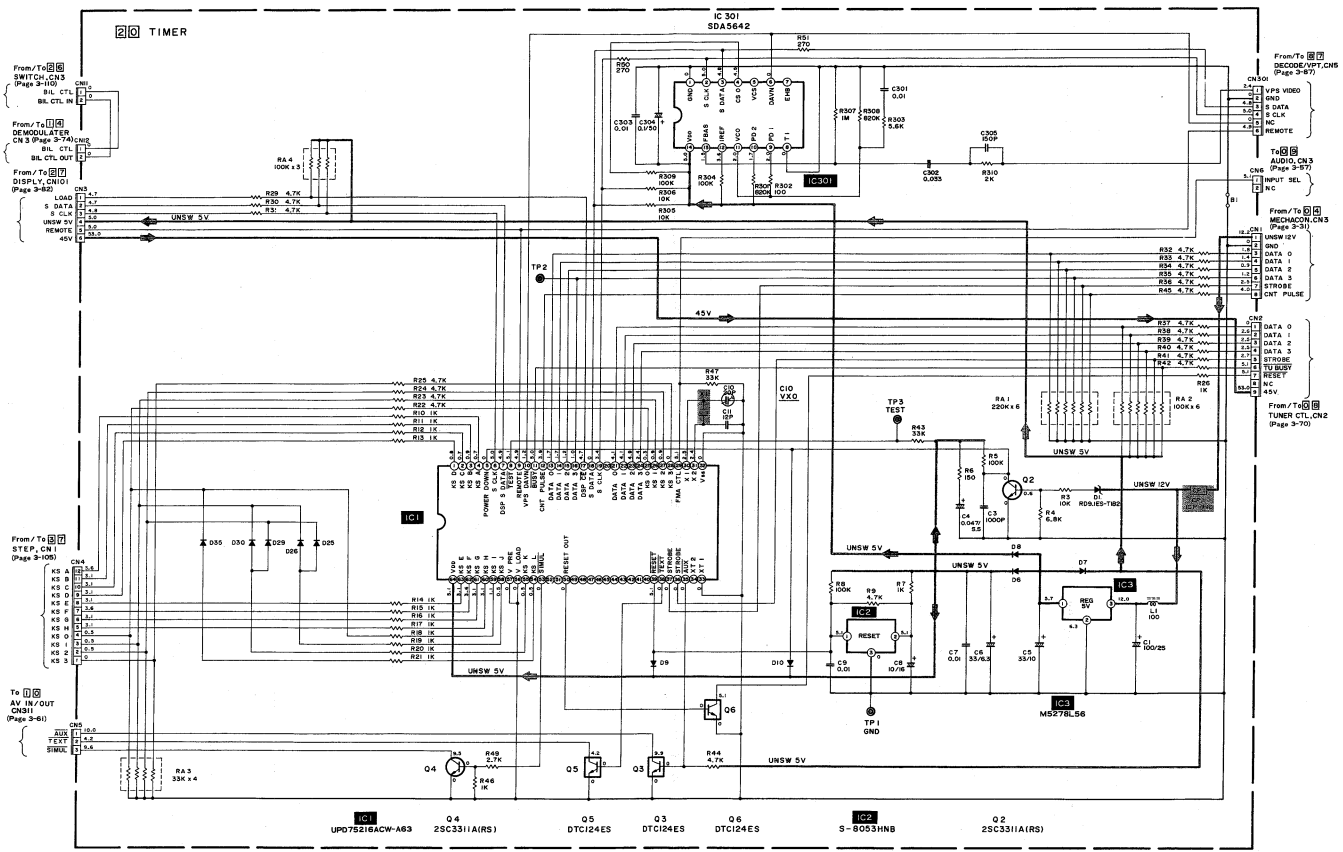


Note: Voltages are DC-measured with a digital voltmeter during stop and tuner mode. (3 ch)

3.35 DEMODULATOR CIRCUIT BOARD

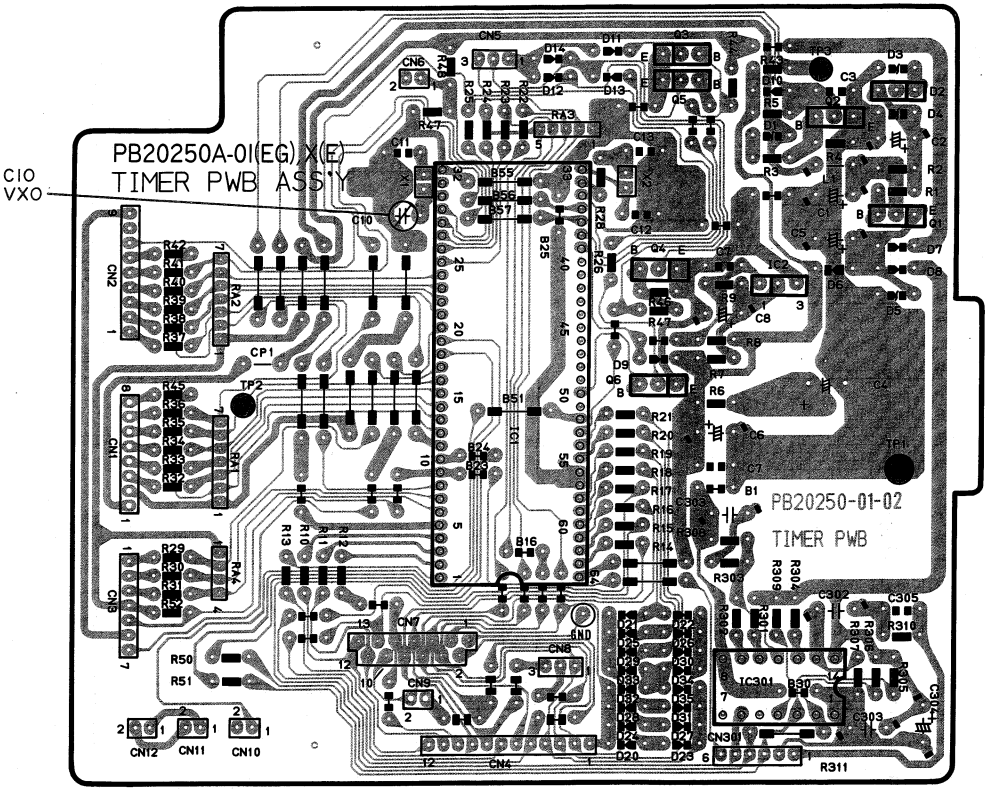


3.36 TIMER SCHEMATIC DIAGRAM

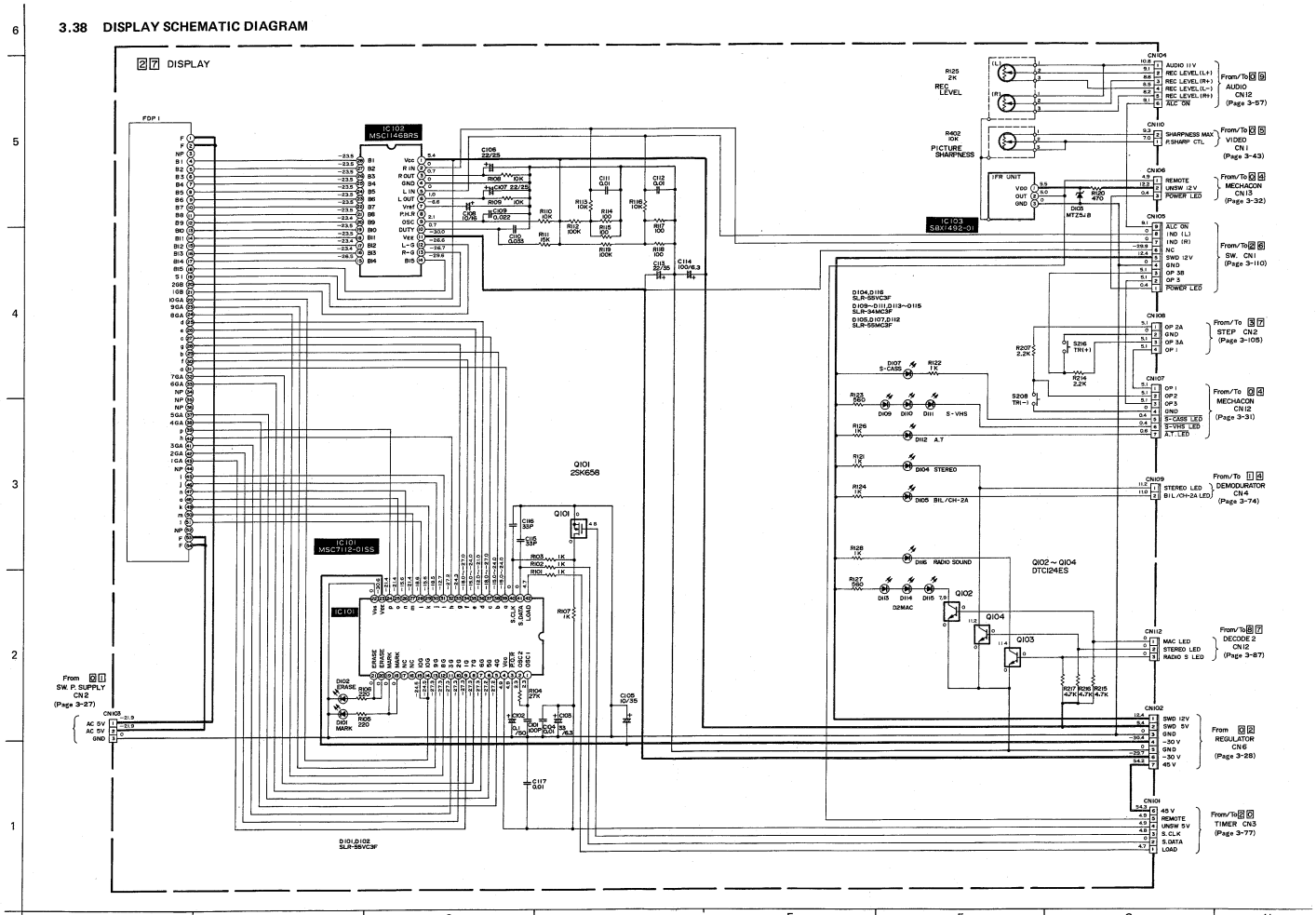


Note: Voltages are DC-measured with a digital voltmeter during stop and tuner mode.

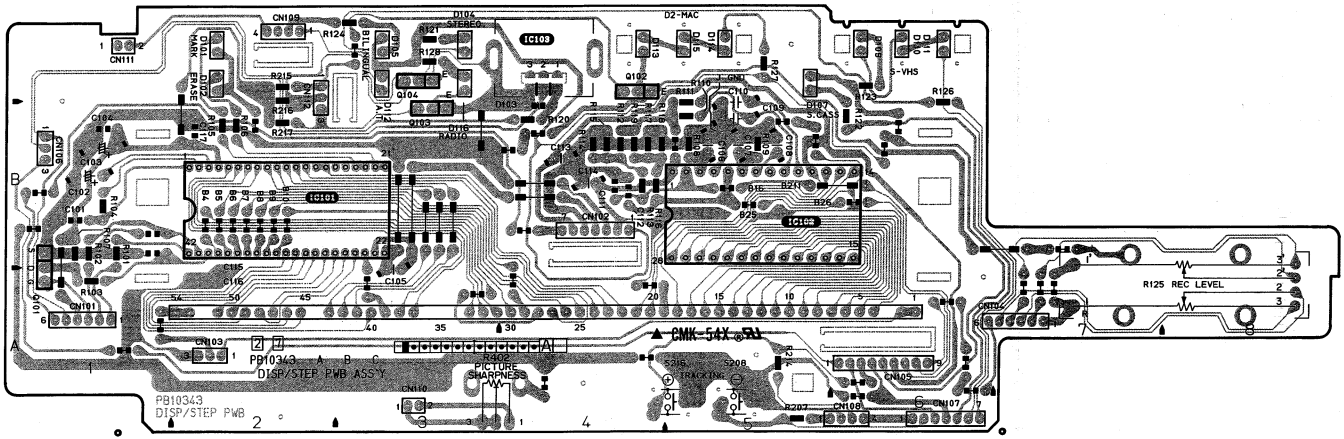
3.37 TIMER CIRCUIT BOARD



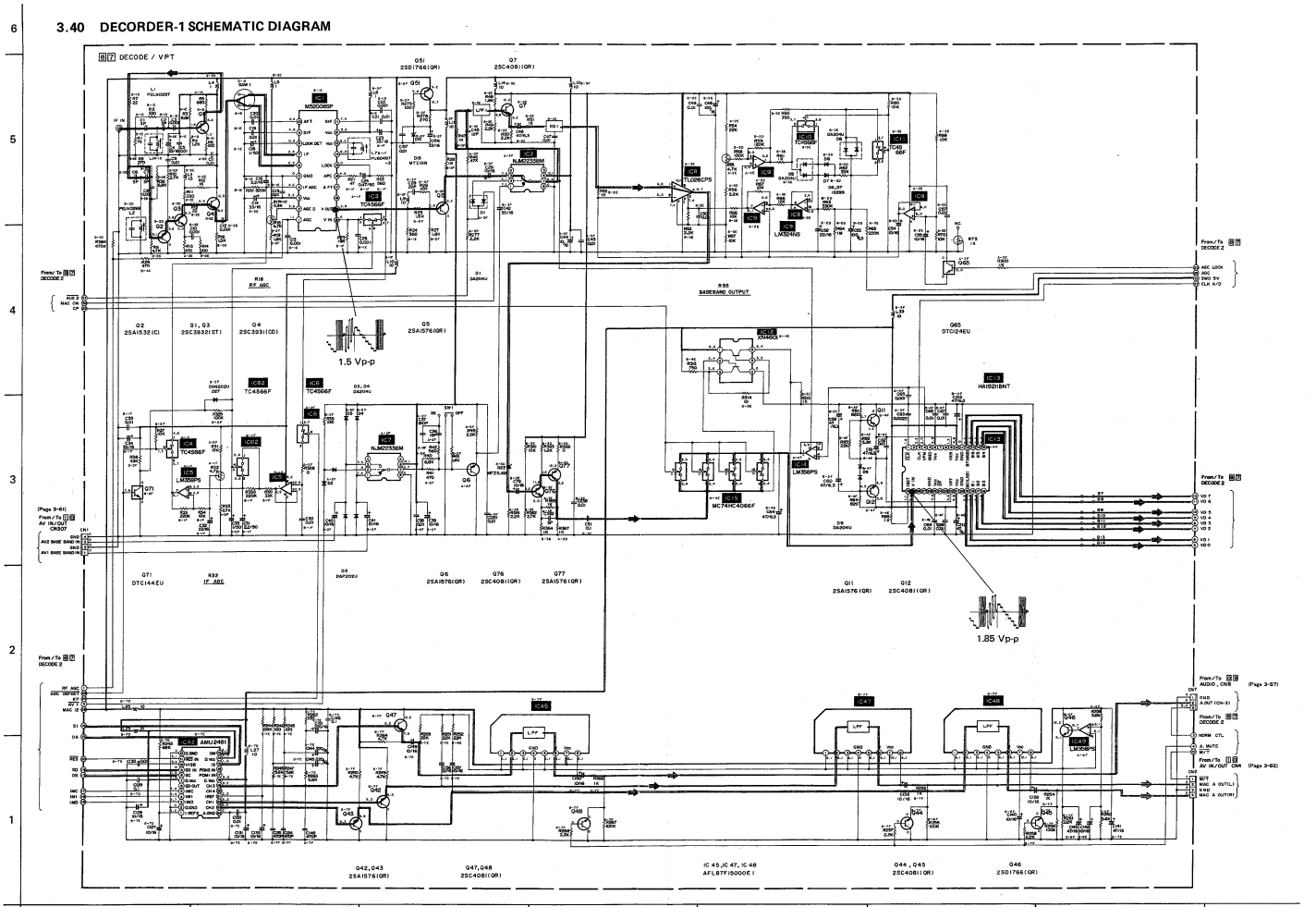
3.38 DISPLAY SCHEMATIC DIAGRAM



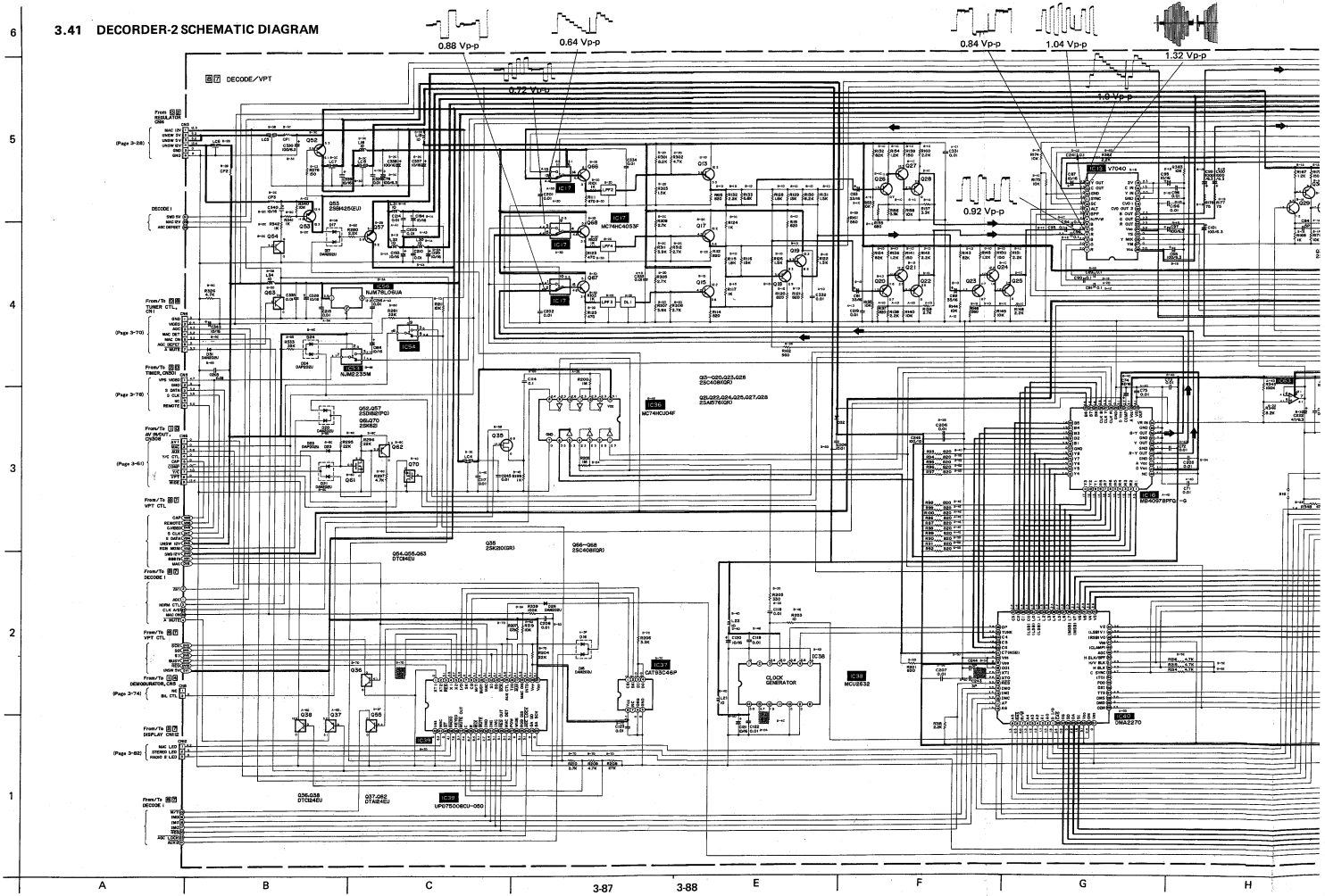
3.39 DISPLAY CIRCUIT BOARD

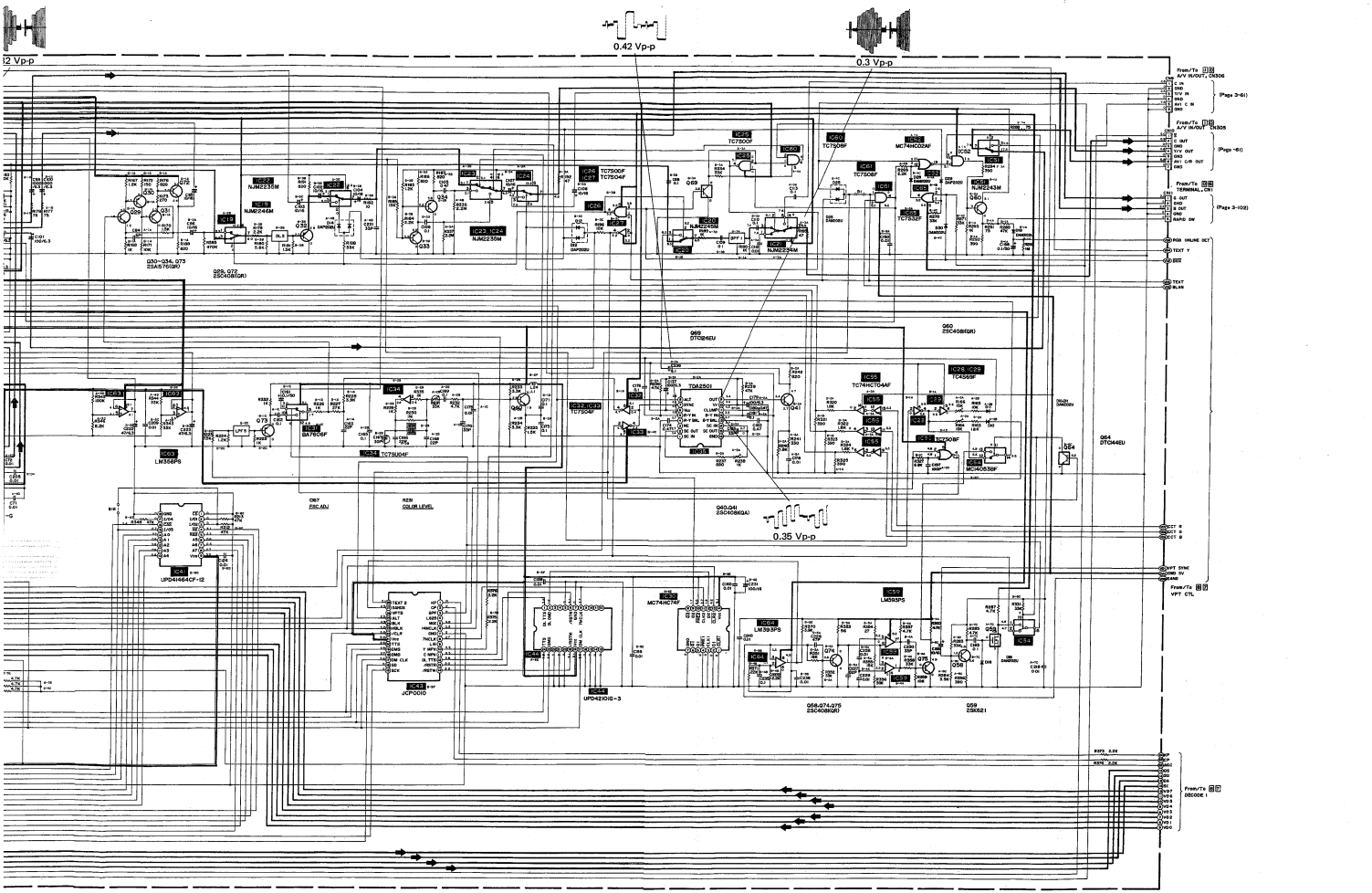


3.40 DECORDER-1 SCHEMATIC DIAGRAM

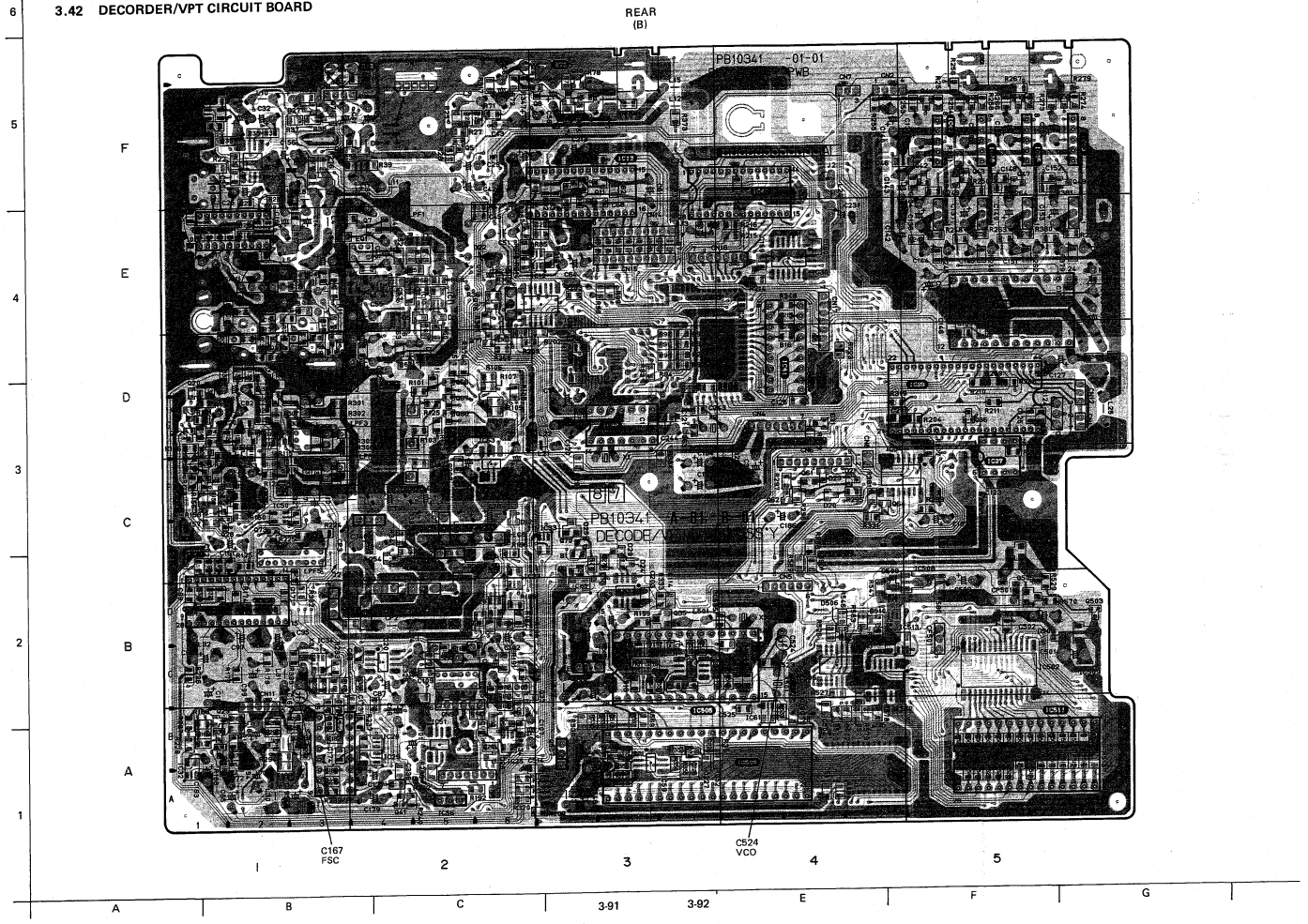


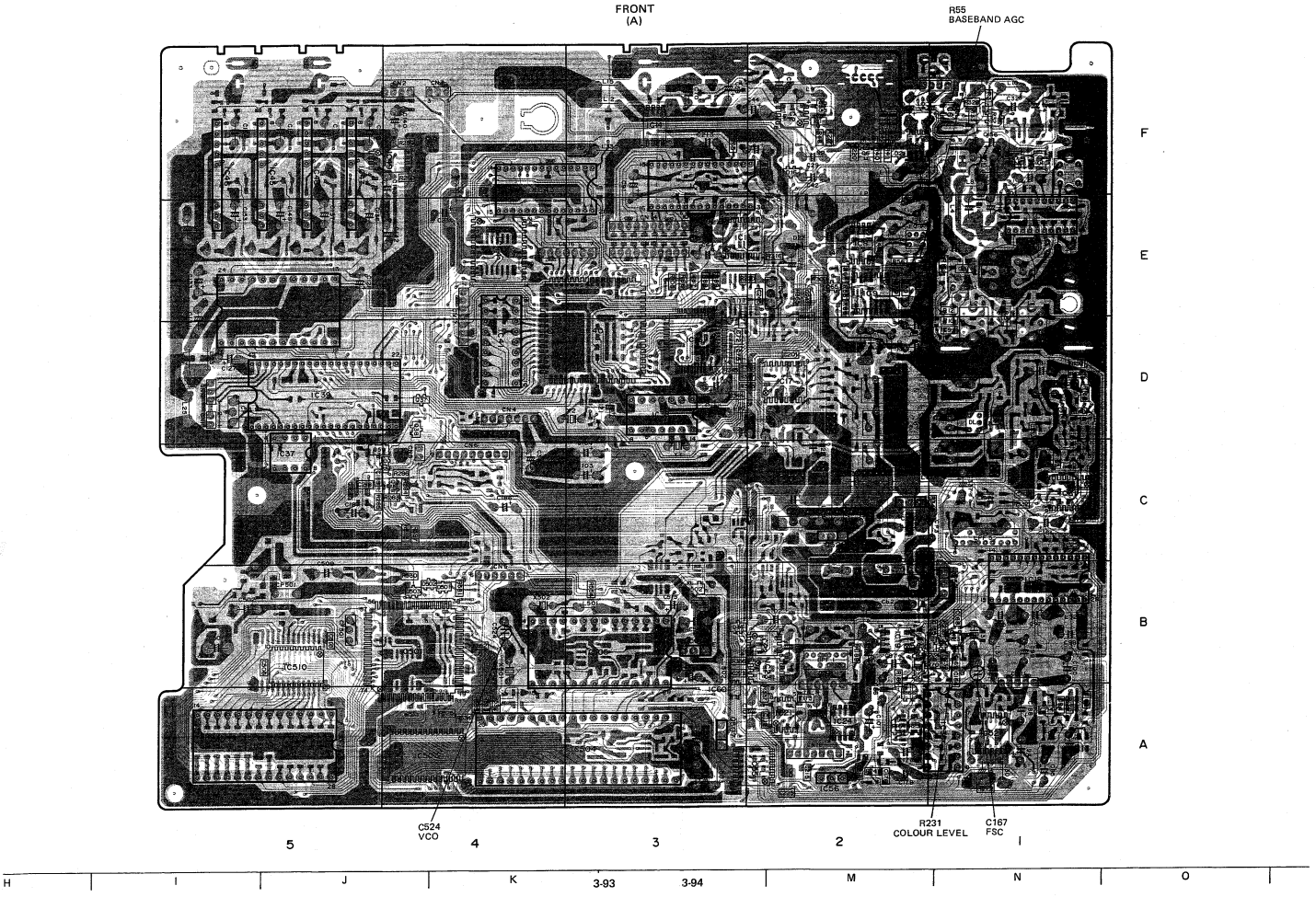
3.41 DECORDER-2 SCHEMATIC DIAGRAM



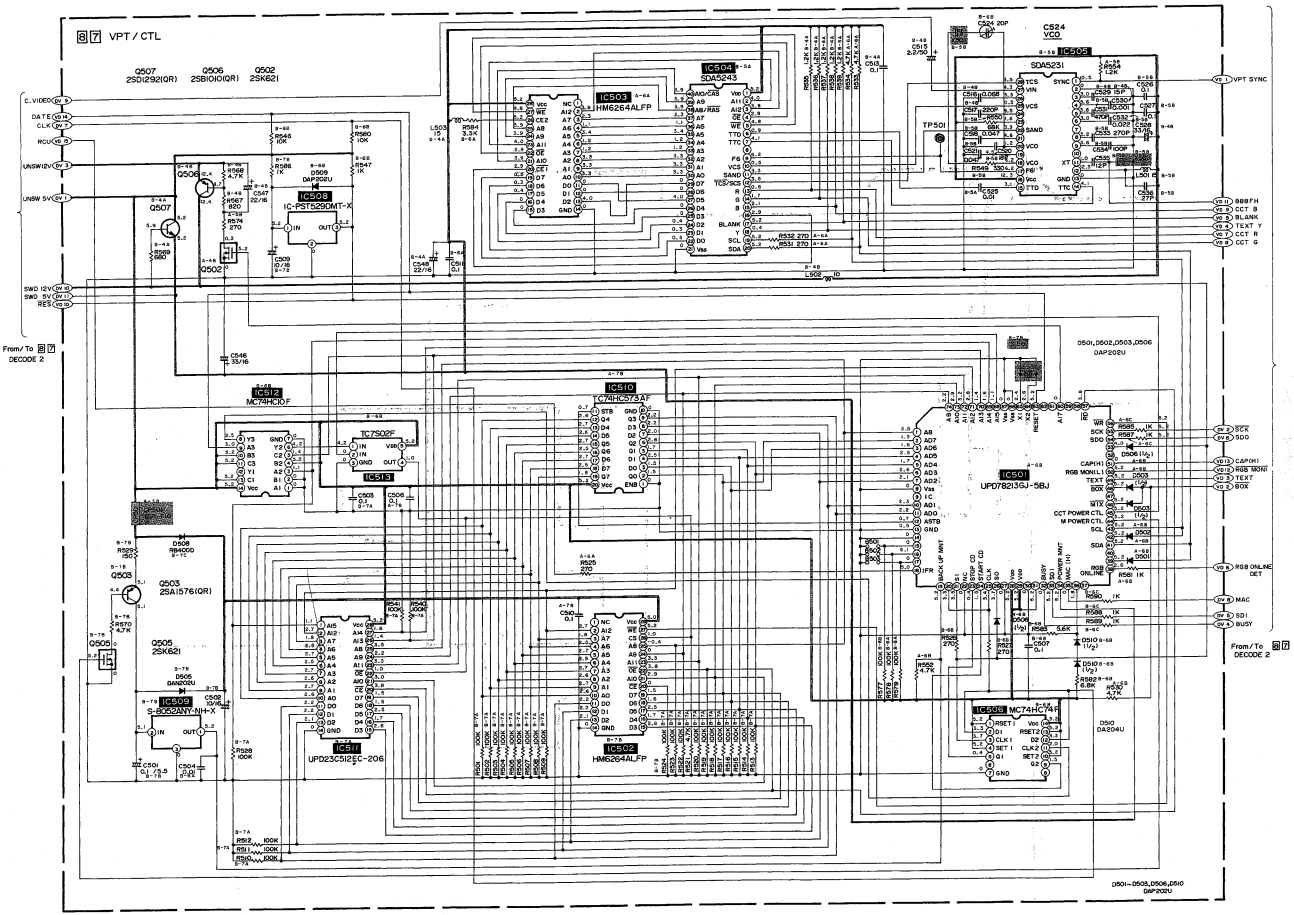

0.42 Vp-p
0.3 Vp-p
0.35 Vp-p
From/To A/V IN/OUT, CN306
From/To A/V IN/OUT, CN305
From/To TERMINAL, CN1
(Page 3-61)
(Page 3-61)
(Page 3-102)
IC26 TC7S00F
IC27 TC7S04F
IC23-IC24 NJM2236M
IC22 NJM2235M
IC21 NJM2246M
IC25 TC7S00F
IC20 TC7S04F
IC29 TC7S00F
IC28 NJM2236M
IC30 TC7S00F
IC31 MC74HC00AF
IC32 NJM2243M
IC33 TC7S32F
Q30~Q34, Q73 2SA1701(Q)
Q68, Q72 2SC4081(Q)
Q69 DTC124EU
Q60 2SC4081(Q)
IC63 LM358PS
IC62 TC7S04F
IC64 BA7606F
IC13-IC14 TC7S04F
IC12 TDA2501
IC35 TC74HCT04AF
IC16, IC22 TC4538F
IC55 TC7S00F
IC56 MC14053BF
Q54 DTC144EU
Q60, Q41 2SC4081(Q)
IC61 UPD41464CF-12
C67 FSC ADJ
R29 COLOR LEVEL
IC58 JCP0010
IC57 UPD42010G-3
IC52 MC74HC74
IC59 LM393PS
IC60 LM393PS
IC19 LM393PS
Q58, Q74, Q75 2SC4081(Q)
Q59 2SK521
From/To VFT CTL
From/To DECODE 1

3.42 DECORDER/VPT CIRCUIT BOARD

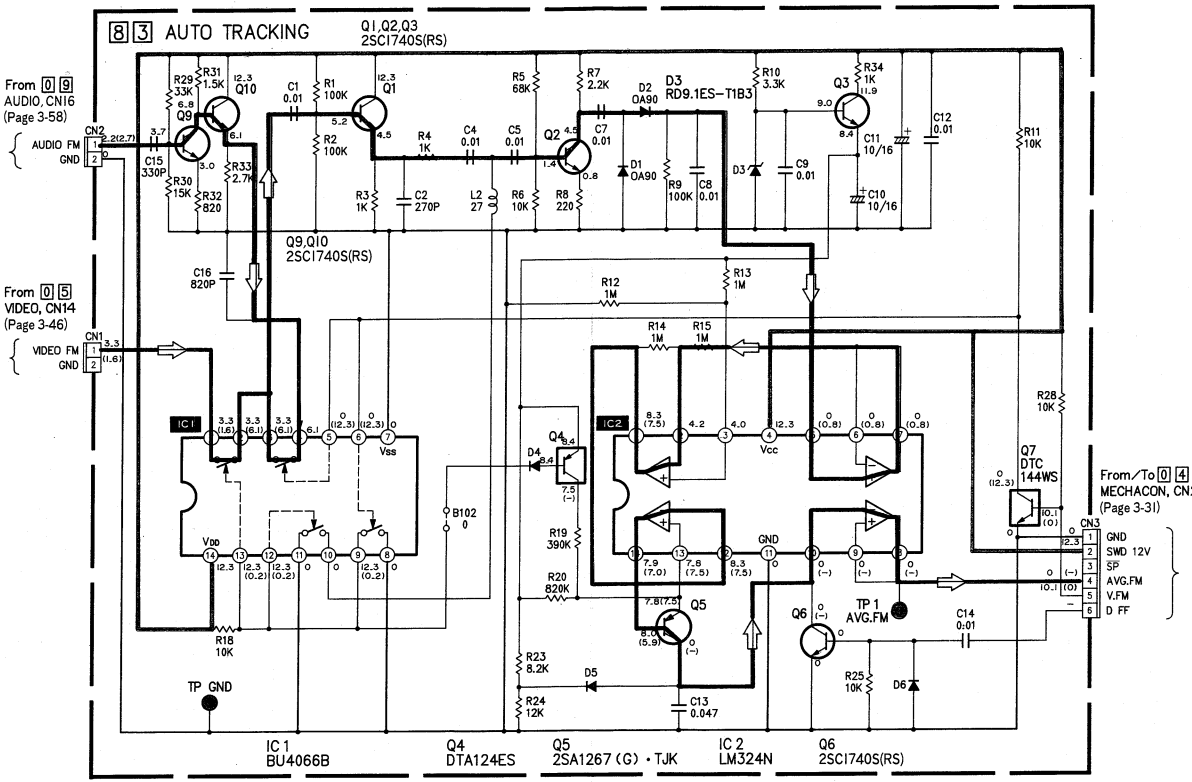



FRONT
(A)
R55
BASEBAND AGC
F
E
D
C
B
A
C524
VCO
R231
COLOUR LEVEL
C167
FSC
5
4
3
2
1
H
I
J
K
3-93
3-94
M
N
O

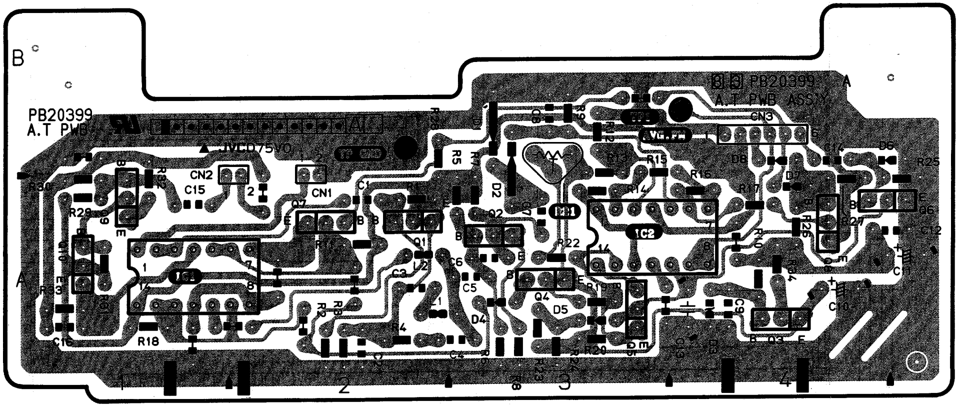
3.43 VPT/CTL SCHEMATIC DIAGRAM



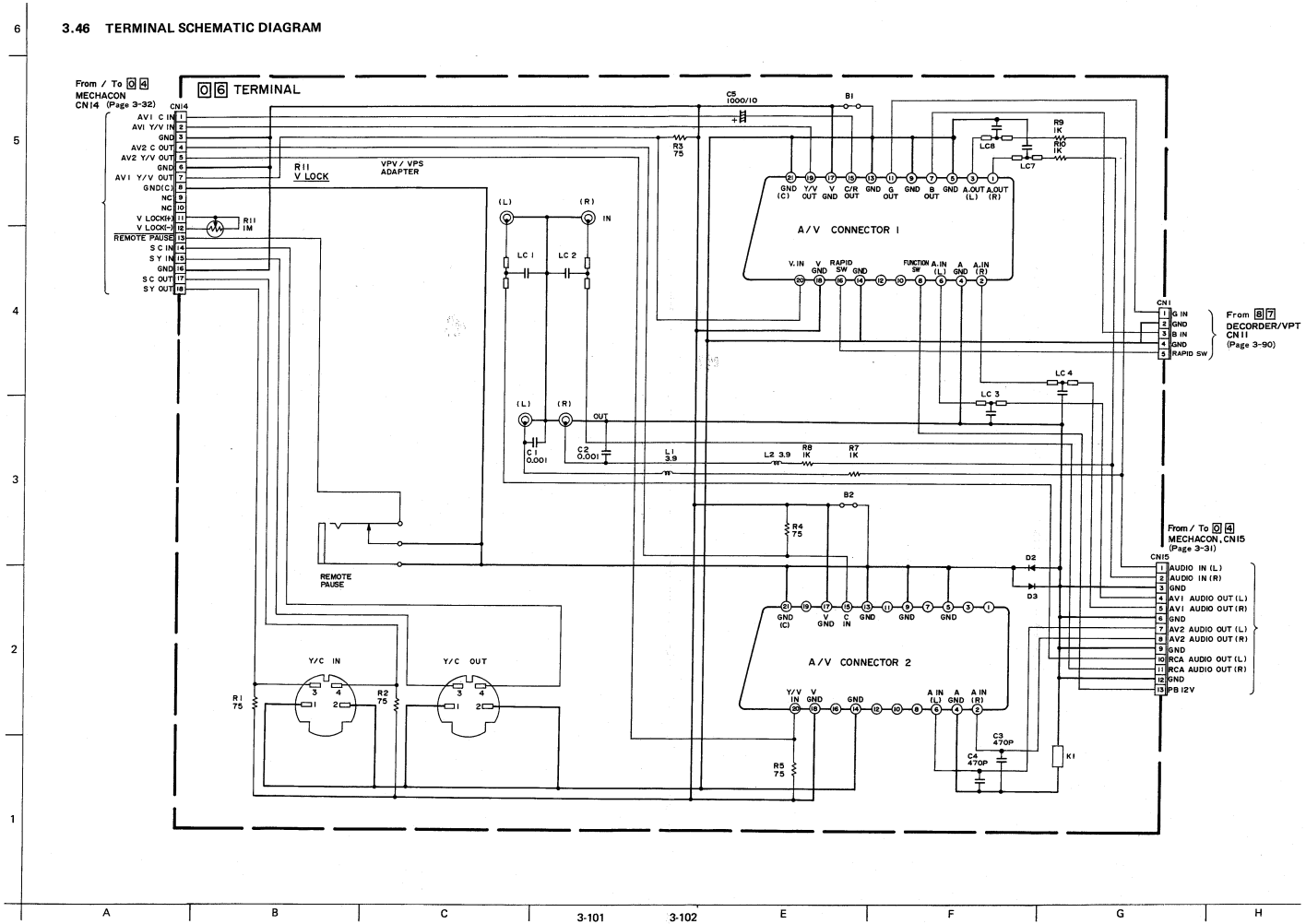
3.44 AUTO TRACKING SCHEMATIC DIAGRAM



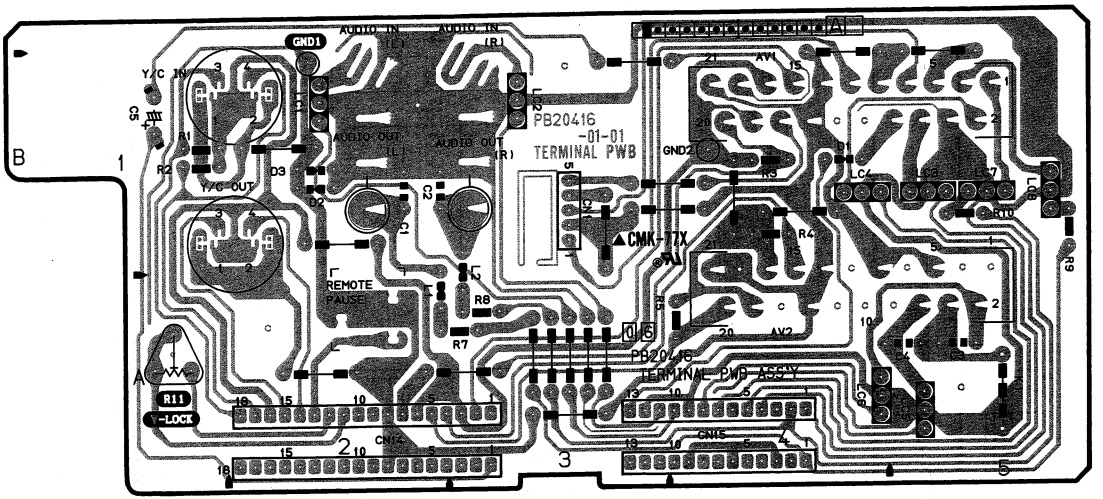
3.45 AUTO TRACKING CIRCUIT BOARD



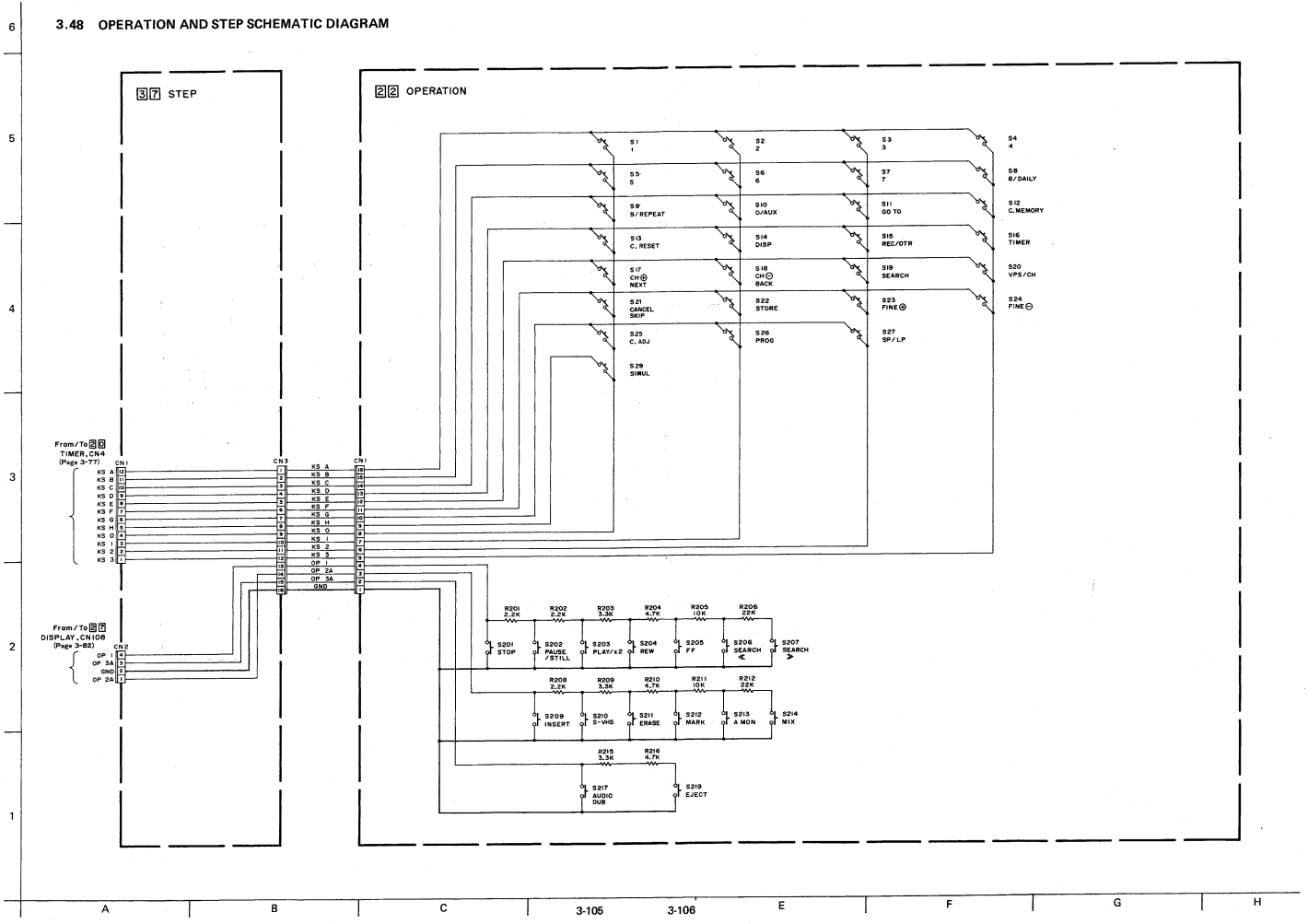
3.46 TERMINAL SCHEMATIC DIAGRAM



3.47 TERMINAL CIRCUIT BOARD

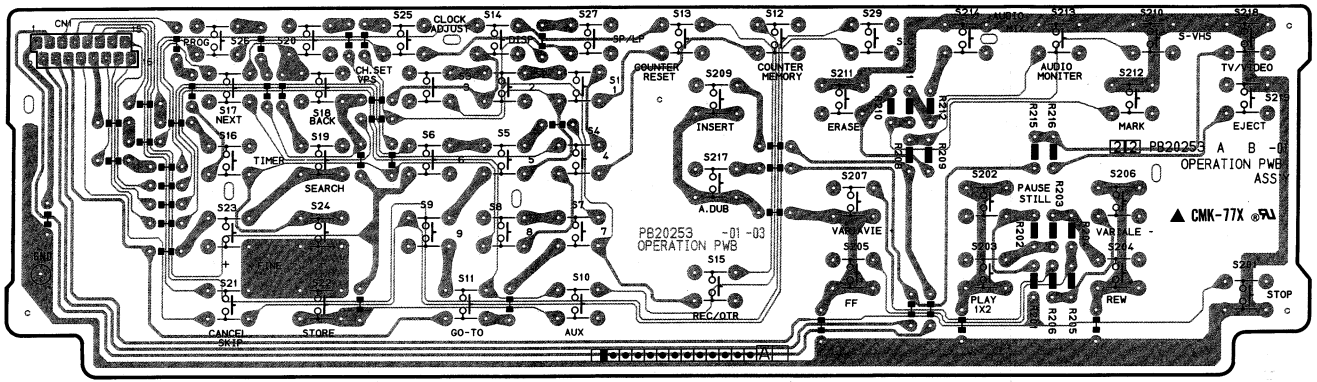


3.48 OPERATION AND STEP SCHEMATIC DIAGRAM

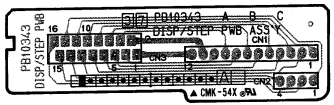


3.49 OPERATION AND STEP CIRCUIT BOARDS

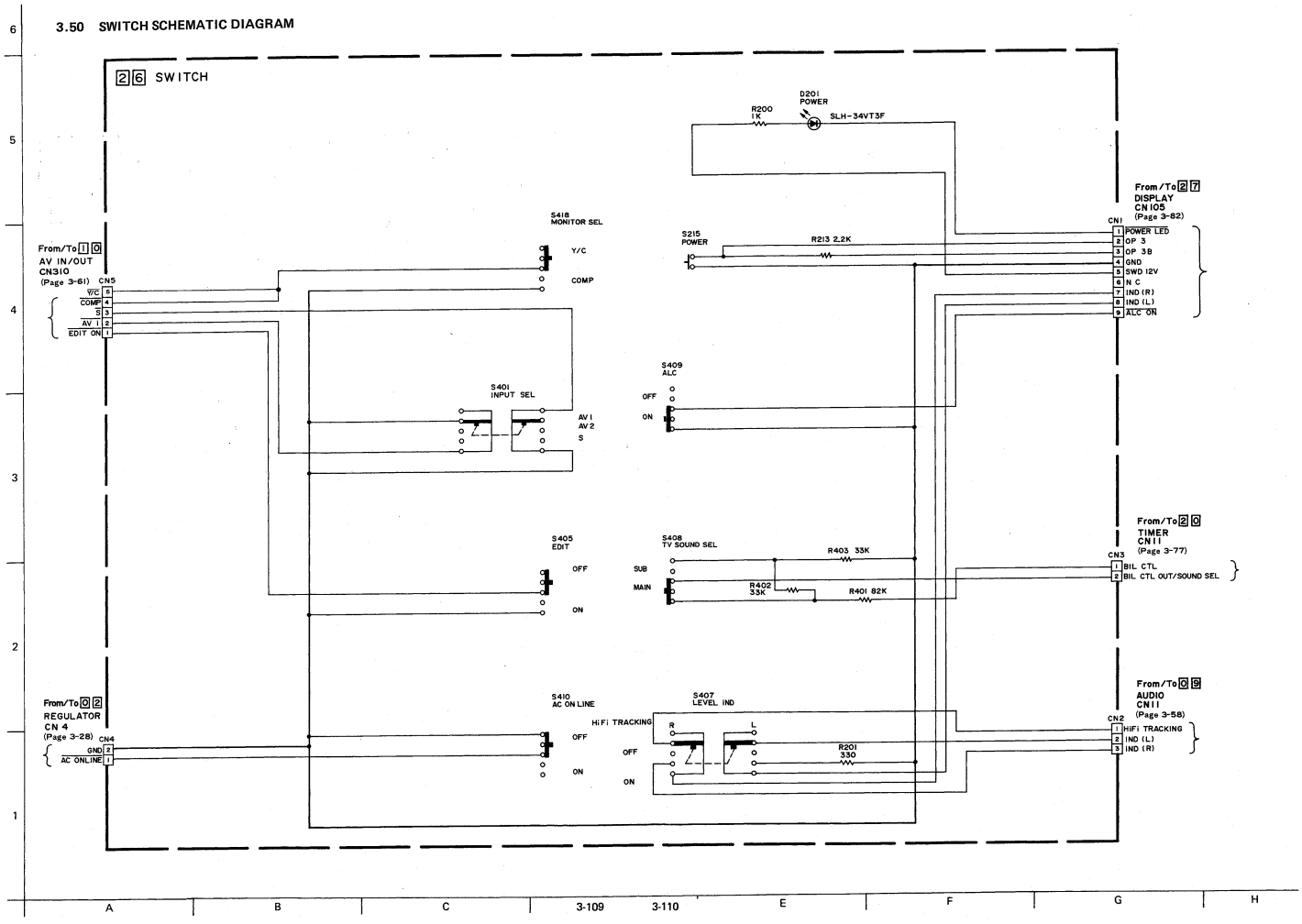
– OPERATION –



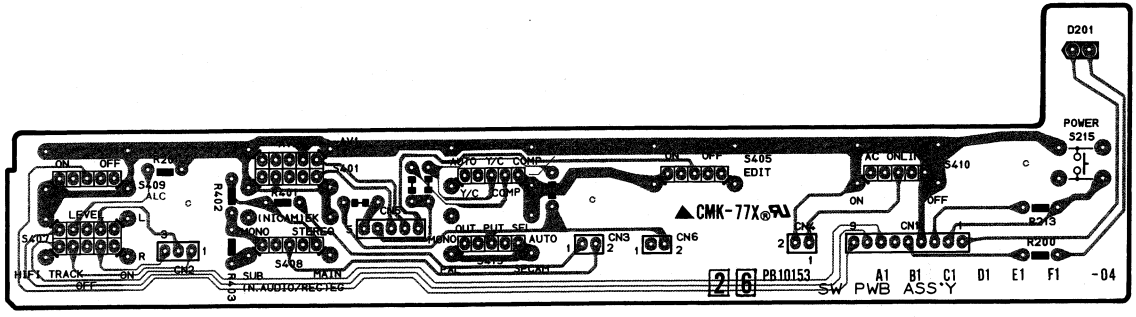
– STEP –



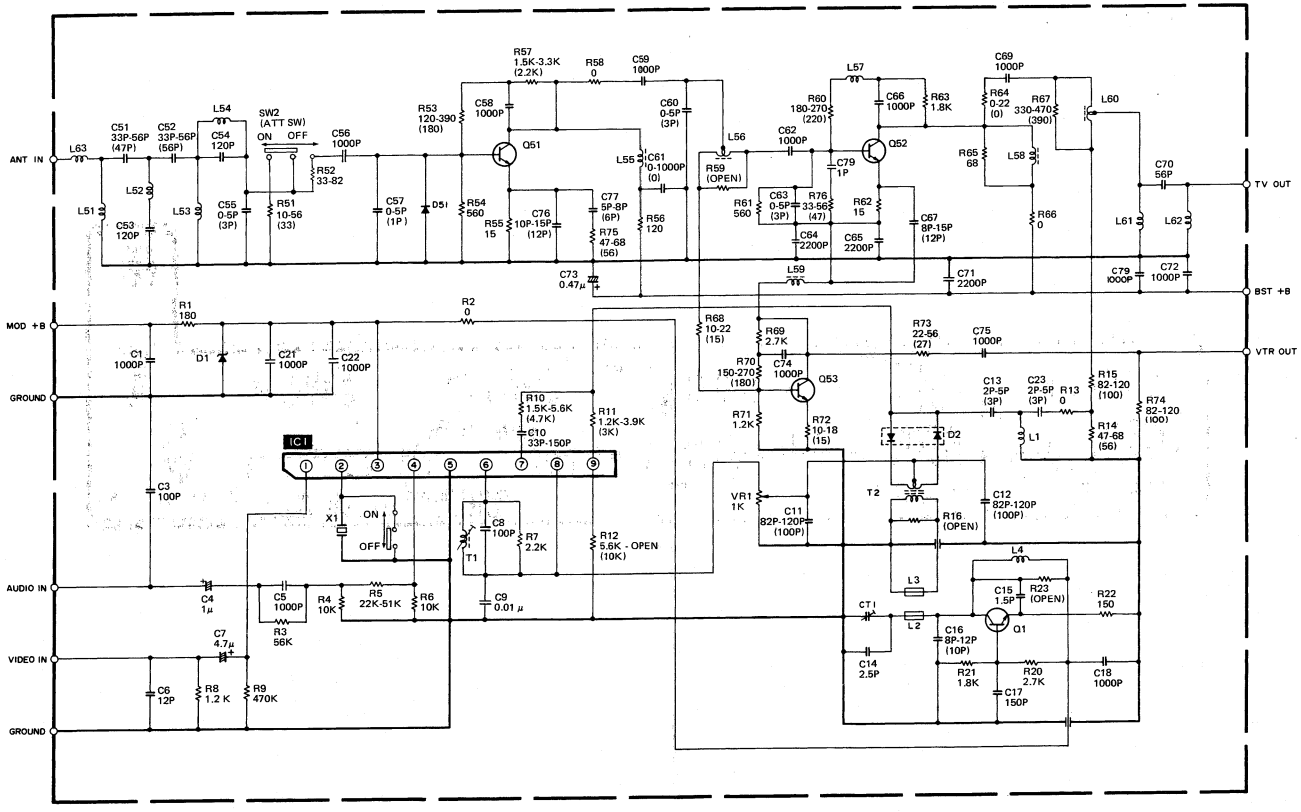
3.50 SWITCH SCHEMATIC DIAGRAM



3.51 SWITCH CIRCUIT BOARD



3.52 RF CONVERTER SCHEMATIC DIAGRAM



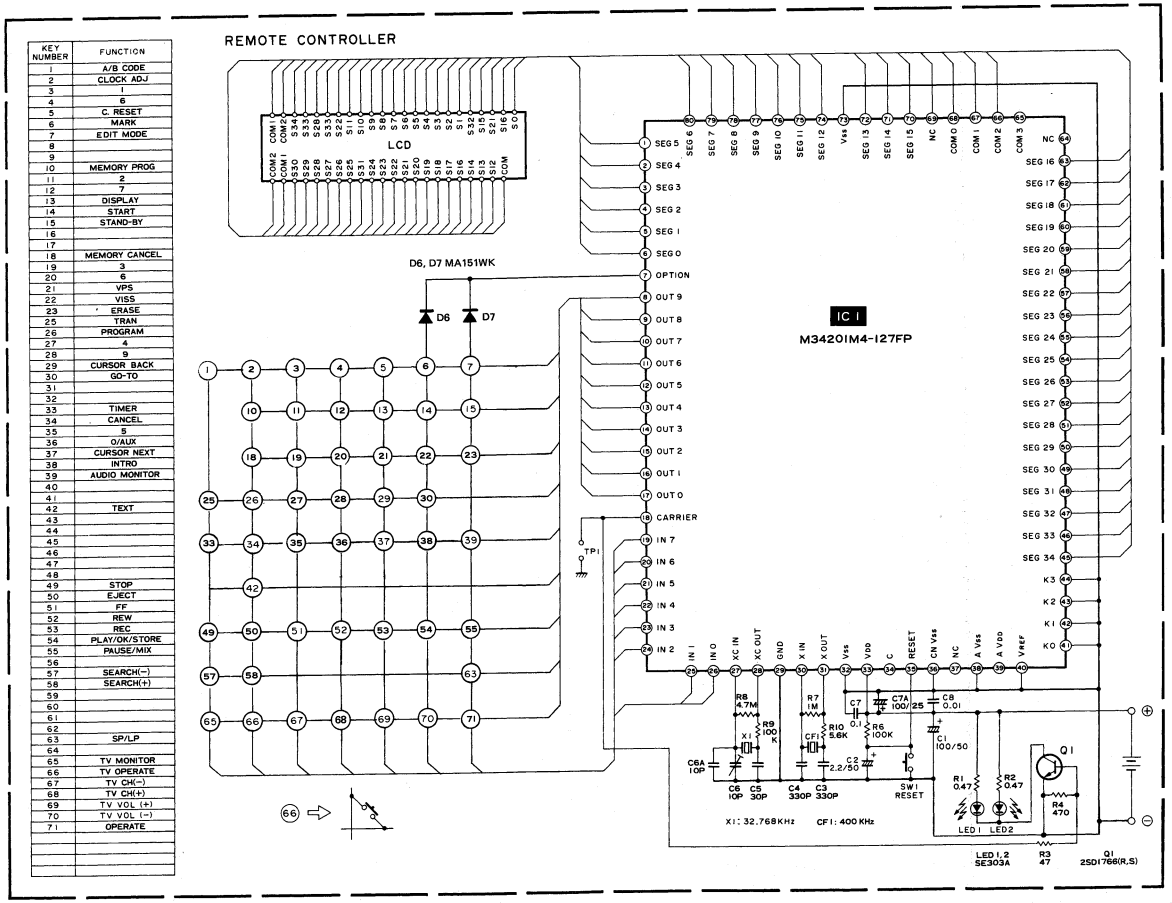
NOTES:

1. All parts slown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

3.53 REMOTE CONTROLLER SCHEMATIC DIAGRAM

Notes: 1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

KEY NUMBER	FUNCTION
1	A/B CODE
2	CLOCK ADJ
3	1
4	6
5	C. RESET
6	MARK
7	EDIT MODE
8	
9	
10	MEMORY PROG
11	2
12	7
13	DISPLAY
14	START
15	STAND-BY
16	
17	
18	MEMORY CANCEL
19	3
20	6
21	VPS
22	VISS
23	' ERASE
25	TRAN
26	PROGRAM
27	4
28	9
29	CURSOR BACK
30	GO-TO
31	
32	
33	TIMER
34	CANCEL
35	5
36	O/AUX
37	CURSOR NEXT
38	INTRO
39	AUDIO MONITOR
40	
41	
42	TEXT
43	
44	
45	
46	
47	
48	
49	STOP
50	EJECT
51	FF
52	REW
53	REC
54	PLAY/OK/STORE
55	PAUSE/MIX
56	
57	SEARCH(−)
58	SEARCH(+)
59	
60	
61	
62	
63	SP/LP
64	
65	TV MONITOR
66	TV OPERATE
67	TV CH(−)
68	TV CH(+)
69	TV VOL (+)
70	TV VOL (−)
71	OPERATE



SECTION 4
EXPLODED VIEWS AND PARTS LIST

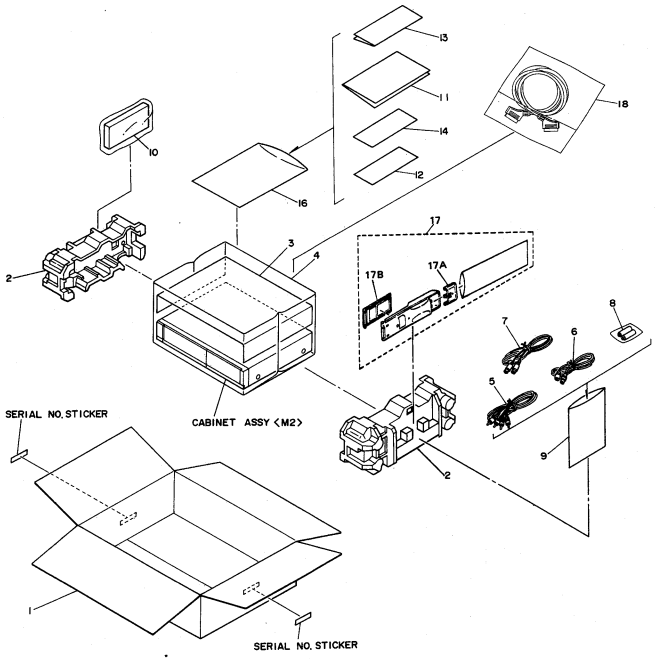
SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

NOTE:

[M] indicates mechanical symbol number.

4.1 PACKING ASSEMBLY <M1>

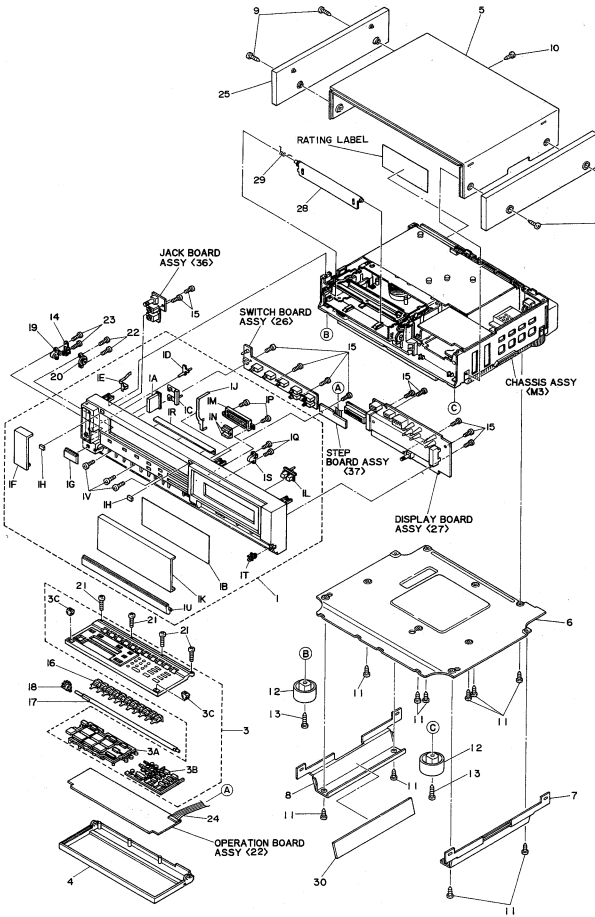


#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
**	**	**********	**********

1. PACKING ASSEMBLY ⟨M1⟩

	1	PQ33232	PACKING CASE
	2	PQ33231A	CUSHION ASSY
	3	PU57777-9	WADDING PAPER
	4	PQM30021-79	POLY BAG
	5	PU56142-3	PIN CORD ASSY
	or	PU56142-5	PIN CORD ASSY
	6	PU59168-3	RF CABLE
	or	PU59167-3	RF CABLE
	7	PU60111	S CABLE
	or	PU61113	S CABLE
	8	UM-3DJ2P	BATTERY
	9	QPGA020-02005	POLY BAG
	10	SE-180P-2	S-VHS CAS TAPE
⚠	11	PU30425-1113	INSTRUCTIONS
	12	TCN-3379	TAPE CATALOG
	13	BT-20114.	WARRANTY CARD
⚠	14	–	DBP INF SHEET
	16	QPGA025-03505	POLY BAG
⚠	17	PQ10779AP	REMOTE CONTROLLER
	17A	PQ32715	BATTERY CAP
	17B	PQ32901B	DOOR ASSY
	18	PU60961	PERI CABLE ASSY

4.2 CABINET ASSEMBLY < M2 >



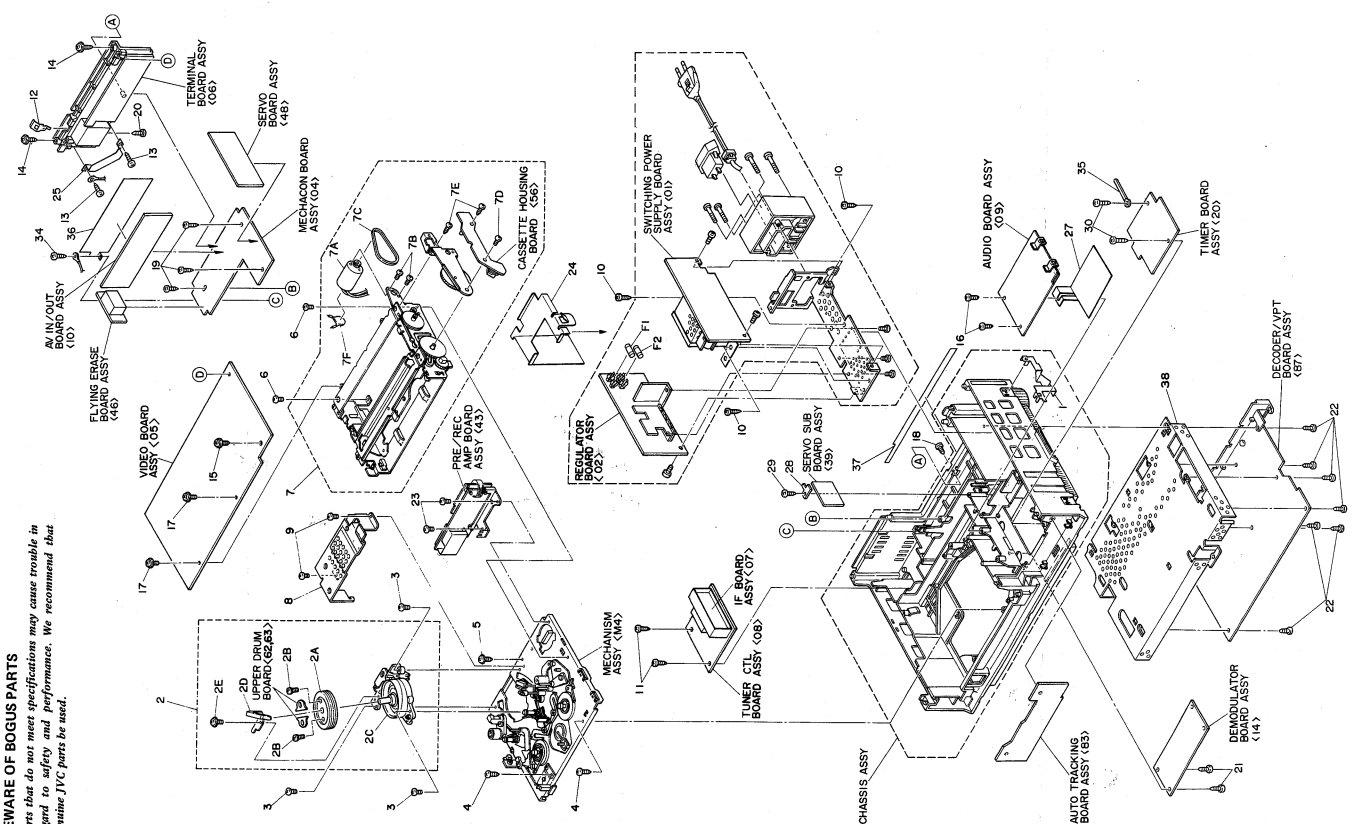
2. CABINET ASSEMBLY (M2)

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PQ10668U-27	FRONT PANEL ASSY
	1A	PQ32347-3	BUTTON (POWER)
	1B	PQ32499-15-9	DISPLAY SHEET
	1C	PQ43395	HINGE (POWER)
	1D	PQ43394	IND (POWER)
	1E	PQ43487	EARTH PLATE
	1F	PQ32351-11	COVER (JACK)
	1G	PQ32348-6	COVER
	1H	PQ43363	PLATE (MAGNET), X2
	1J	PQ32395-1-2	EARTH PLATE
	1K	PQ32485	D. WINDOW
	1L	PQ43455	BUTTON (TR)
	1M	PQ32352	GUIDE (SLIDE)
	1N	PQ32353	KNOB (SLIDE), X2
	1P	SDSF2606Z	SCREW, X2
	1Q	SDSF2608Z	SCREW, X2
	1R	PQ32571	PLATE (FRONT)
	1S	PQ43467	HOLDER
	1T	PU60109	CATCHER
	1U	PQ32462M-5	DOOR ASSY
	1V	SDSG2606Z	SCREW, X3
	3	PQ20710G-4	DOOR ASSY (UPPER)
	3A	PQ32534-4	BUTTON (1)
	3B	PQ32518-5	BUTTON (2)
	3C	PU59891-2	MAGNET ASS'Y, X2
	4	PQ20666U-10	DOOR ASSY (LOWER)
⚠	5	PQ10545-16	TOP COVER
⚠	6	PQ10706-2	BOTTOM COVER
	7	PQ20964-2	SHIELD PLATE (R)
	8	PQ20965-1-2	SHIELD PLATE (L)
	9	SDSA4020M	SCREW, X4
	10	SDSF3010M	SCREW
	11	SDSF3008Z	SCREW, X10
	12	PQ44602A	FOOT ASS'Y, X2
	13	SDSF3012Z	SCREW, X2
	14	PQ43704-1-1	SPRING
	15	SDSF2608Z	SCREW, X11
	16	PQ32519-3	BUTTON (3)
	17	PQ32362-1-2	SHAFT
	18	PQ43470	GEAR
	19	PQ43467	HOLDER
	20	PU60527	DAMPER UNIT
	21	SPSF2008M	SCREW, X4
	22	SDSF2010Z	SCREW, X2
	23	SDSF2608Z	SCREW, X2
	24	PQ32556	FPC
	25	PQ20990A	SIDE W. ASSY (L)
	26	PQ20991A	SIDE W. ASSY (R)
	28	PQ31819-22	CASSETTE HOUSING DOOR
	29	PQ42410-1-1	TORSION SPRING
	30	PQ33260-1-1	FILTER (L)

3. CHASSIS ASSEMBLY (M3)

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PQ32749	EARTH PLATE
	2	PDV2146A	DRUM ASSY
	2A	PDM2119A	UPPER DRUM ASSY
	2B	PDM4165A	DRUM SCREW ASSY, X2
	2C	PDM2113C	LOWER DRUM MOTOR ASSY
	2D	PDM4015B	BRUSH ASSY
	2E	LPSP2606Z	SCREW
	3	SDSP2608Z	SCREW, X3, DRUM ASSY
	4	PQ43831-2	SPECIAL SCREW, X2, MECHANISM
	5	PQ43831-2	SPECIAL SCREW, MECHANISM
	6	SDST2605Z	SCREW, X2, CASSETTE HOUSING
	7	PUS28277H	CASSETTE HOUSING ASSY
	7A	PQ42385A	MOTOR ASS'Y
	or	PQ42385C	MOTOR ASS'Y
	or	PQ42385B	MOTOR ASS'Y
	or	PQ42385E	MOTOR ASS'Y
	7B	SPSP2603Z	SCREW, X2
	or	SPSP3003Z	SCREW, X2
	7C	PQM30003-19	BELT
	7D	SPSP2604Z	SCREW
	7E	SPST2605Z	SCREW, X2
	7F	DV710SR223M16	VARISTOR
	8	PQ31171-5	DRUM SHIELD
	9	SDST2605Z	SCREW, X2, DRUM SHIELD
	10	PQ43831-2	SPECIAL SCREW, X3, TRANS BRACKET
	11	SDSF3008Z	SCREW, X2, TUNER BOARD
	12	PQ43012-1-1	EARTH PLATE, RF CONV.
	13	SDSF2608Z	SCREW, X2, RF. CONV.
	14	GPSF2610Z	SCREW, X2, TERMINAL BOARD
	15	GPSF2610Z	SCREW, MAIN BOARD
	16	SDSF3008Z	SCREW, X2, AUDIO BOARD
	17	PQ44003	TAP TIGHT SCREW, X2, MAIN BOARD
	18	SDSF3010M	SCREW, TERMINAL BOARD
	19	SDSF3008Z	SCREW, X3, M. CTL. BOARD
	20	SDST2605Z	SCREW, RF. CONV
	21	SDSF3008Z	SCREW, X2, DEMODULATOR BOARD
	22	SDSF3008Z	SCREW, X7, D/VPT BOARD
	23	SDST2605Z	SCREW, X2, PRE/REC
	24	PQ32578	COVER (AC)
	25	PQ43683	BRACKET (RF)
	27	PQ32255A	SHILD PLATE ASSY
	28	PQ43714	BRACKET (FE), SERVO SUB
	29	SDSF3008Z	SCREW, SERVO SUB
	30	SDSF3008Z	SCREW, X2, TIMER
	34	SDSF3008Z	SCREW, F.E BOARD
	35	PU49485-4	WIRE CLAMP
	36	PQ33155A	S.PLATE ASS'Y
	37	PQ32566-5-3	PLATE
	38	PQ20950	SHIELD PLATE

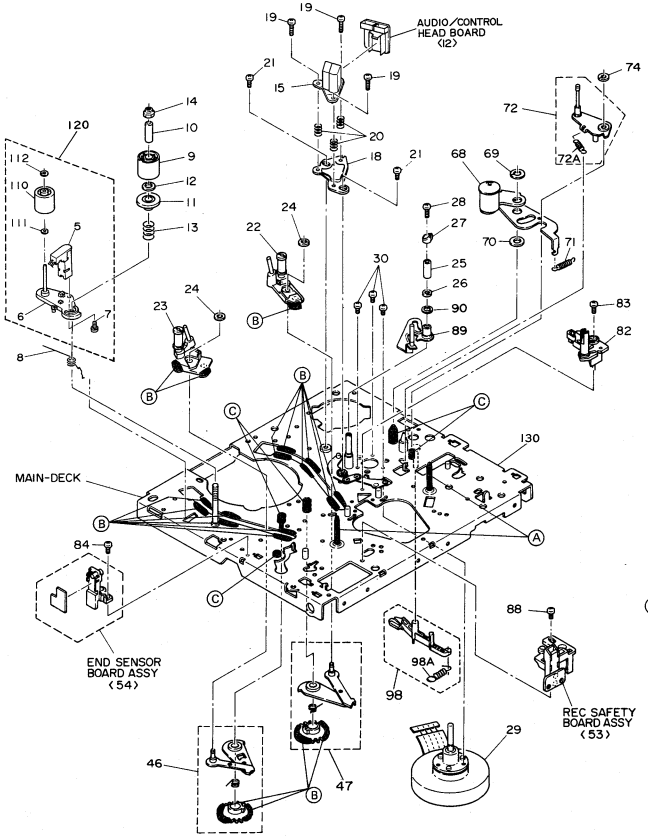
4.3 CHASSIS ASSEMBLY <M3>



BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.

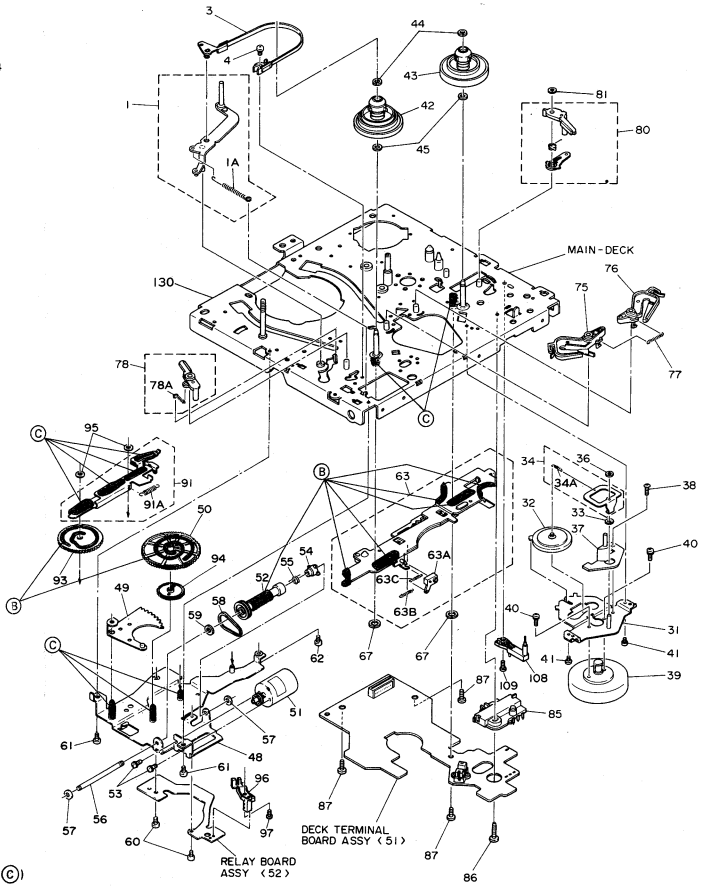
4.4 MECHANISM ASSEMBLY (1) <M4>



Category	Part number	Mark
Oil	COSMO-HV56	Ⓐ
Grease (Black)	MOS2-C	Ⓑ
Grease (Ivory)	DAPHNE-XLA-2	Ⓒ

NOTE: The section marked in red (Ⓐ, Ⓑ and Ⓒ) indicate lubrication and greasing areas.

MECHANISM ASSEMBLY (2) <M4>



4. MECHANISM ASSEMBLY ⟨M4⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PQ43710A	TENSION ARM ASSY
	1A	PQ41952-5	SPRING
	3	PQ41948A	TENSION BAND ASSY
	4	SDST2606Z	SCREW
	5	PU60646	FULL ERASE HEAD
	6	PQ43299A-2	FE HEAD SUB ASSY
	7	LPSP2004Z	SCREW
	8	PQ41954-1-1	TORSION SPRING
	9	PQ41955	IMPEDANCE ROLLER
	10	PQ41956	COLLAR
	11	PQ41957	LOWER FLANGE
	or	PQ42958	LOWER FLANGE
	12	PQM30018-39	SPACER
	or	PQM30018-50	SPACER
	13	PQM30002-124	COMPRESSION SPRING
	14	PQ40353	NYLON NUT
	15	PU60560-2	AUDIO/CONTROL HEAD
	18	PQ42984-2	HEAD BASE
	19	PQ43687A	SPECIAL SCREW, X3
	20	PU30080-49	SPRING, X3
	21	SDSP2606Z	SCREW, X2
	22	PU60557-1-4	POLE BASE ASSY (TAKE-UP)
	or	PU59994	POLE BASE ASSY (TAKE-UP)
	or	PQ43148A	POLE BASE ASSY (TAKE-UP)
	23	PU60556-1-2	POLE BASE ASSY (SUPPLY)
	or	PU59993	POLE BASE ASSY (SUPPLY)
	or	PQ43147A	POLE BASE ASSY (SUPPLY)
	24	PQM30017-5	SLIT WASHER, X2
	25	PU53629-3	TAPE GUIDE
	26	PQ40268-2	GUIDE FLANGE
	27	PQ42999-2-1	GUIDE POLE CAP
	28	SDSP2006Z	SCREW
⚠	29	PU60201V	CAPSTAN MOTOR
	30	SPSP2605N	SCREW, X3
	31	PQ41974A-3	REEL MOTOR BRACKET ASSY
	32	PU58645-1-4	IDLER ARM
	33	Q03093-834	WASHER
	34	PQ41976A-1	SPRING ARM ASSY
	34A	PQ42212-1-4	SPRING
	36	PQM30017-22	SLIT WASHER
	37	PQ41978	HOLDER
	38	SPST2606Z	SCREW
⚠	39	PU59926V	REEL MOTOR
	40	LPSP2604Z	SCREW, X2
	41	SPST2606Z	SCREW, X2
	42	PU59250-1-2	REEL DISK (SUPPLY)
	43	PU58638-1-2	REEL DISK (TAKE-UP)
	44	PQM30017-5	SLIT WASHER, X2
	45	Q03093-828	WASHER, X2
	46	PQ41979A-5	LOADING ARM ASSY (SUPLLY)
	47	PQ41985B-3	LOADING ARM AY (TAKE-UP)
	48	PQ42973A	CAM BKT ASS'Y
	49	PQ41994A-3	ARM GEAR ASSY
	50	PQ20577	CONTROL CAM
	51	PQ41996B	MODE MOTOR ASSY
	or	PQ41996C	MODE MOTOR ASSY

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	52	PQ41998A	WORM ASSY
	53	LPSP2604Z	SCREW, X2
	54	PQ42001	WINDMILL
	55	PQ42002	CLUTCH SPRING
	56	PQ42003	WORM SHAFT
	57	PQM30017-5	SLIT WASHER, X2
	58	PQM30003-20	BELT, FOR MODE MOTOR
	59	PQM30018-22	SPACER
	60	SPST2606Z	SCREW, X2
	61	SPST2606Z	SCREW, X2
	62	LPSP2604Z	SCREW
	63	PQ42038C	PLATE ASSY
	63A	PQ31044-1-2	LOCK LEVER
	63B	PQM30001-223	TENSION SPRING
	63C	PQM30001-211	TENSION SPRING
	67	PQM30017-28	SLIT WASHER, X2
	68	PQ42006B	PINCH ROLLER ARM ASSY
	69	PQM30017-28	SLIT WASHER
	70	Q03093-833	WASHER
	71	PQM30001-229	TENSION SPRING
	72	PQ42013B-4	GUIDE ARM ASSY
	72A	PQ42029	SPRING
	74	PQM30017-6	SLIT WASHER
	75	PQ42019B-6	MAIN BRAKE ASSY (SUPPLY)
	76	PQ42020B	MAIN BRAKE AY (TAKE-UP)
	77	PQM30001-216	TENSION SPRING
	78	PQ42021A-3	SUB BRAKE ASSY (SUPPLY)
	78A	PQ42023-1-2	TENSION SPRING
	80	PQ42037A-2	SUB BRAKE ASSY (TAKE-UP)
	81	PQM30017-6	SLIT WASHER
	82	PU59925-1-1	LED HOLDER
	83	SPST2606Z	SCREW
	84	SPST2606Z	SCREW
	85	PU60444	SLIDE SWITCH
	86	SDSP2610Z	SCREW
	87	SDSP2606Z	SCREW, X3
	88	SDST2606Z	SCREW
	89	PQ42979A-2	HALF LOADING ARM ASSY
	90	PQM30017-29	SLIT WASHER
	91	PQ42974A	SLIDE CAM PLATE ASSY
	91A	PQM30001-224	SPRING
	93	PQ31677	H.LOADING CAM
	94	PQ42953	SECOND GEAR
	95	PQM30017-24	SLIT WASHER, X2
	96	PU61088	REEL SENSOR (SUPPLY)
	97	LPSP2604Z	SCREW
	98	PQ43295A-1	MOTOR BRAKE ASSY
	98A	PQ43296	SPRING
	108	PU59919-1-1	CASSETTE SWITCH
	109	SDST2608Z	SCREW
	110	PQ43298A	ROLLER ASSY
	111	Q03093-829	WASHER
	112	PQM30017	SLIT WASHER
	120	PQ43330B-2	FE HEAD ASSY
	130	PQ20248H-20	MECHANISM DECK ASSY

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5. SW POWER SUPPLY BOARD ASSY 〈01〉〈02〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB10313A-01	SWITCH/REGULATOR BOARD ASSY	
⚠	BRT1	PQ20946	TRANS BRACKET	
	BRT2	PQ33112	BASE (FAN)	
	CV1	PQ33111	COVER (FAN)	
	MT1	PELM0149	FAN MOTOR	
⚠	POC1	QMP4019-200	POWER CORD	
⚠	AO1	QMC9021-001	AC OUTLET	
⚠	HD1	QHS3771-108	STRAIN RELIEF	
⚠	HS1	PQ43230	HEAT SINK (2)	
	SCW1	DPSP3006Z	ASSY SCREW, X2	
	SCW2	DPSP3012Z	SCREW, X2	
	SCW3	SDST3006Z	SCREW, X3	
	SCW4	SDSG3008Z	SCREW, X3	
	SCW5	SDSG3006Z	SCREW, X2, FOR Q21, IC101	
	SCW6	PQ44355	SPECIAL SCREW, X2, FOR FAN	
	SCW7	PQ44355-2	SPECIAL SCREW, X2, FOR FAN	
	SLD1	PQ32071	SHILD CASE (2)	
⚠	SPC1	PQ43773	SHEET (AC)	
	SPC2	PQ44361	SPACER (FAN), X2	
⚠	F1	QMF51E2-1R25	FUSE	1.25A, AC250V
⚠	or	QMF51E2-1R25J1	FUSE	1.25A, AC250V
⚠	F2	QMF51E2-2R0	FUSE	2.0A, AC250V
⚠	or	QMF51E2-2R0J1	FUSE	2.0A, AC250V

— SWITCHING BOARD ASSEMBLY 〈01〉 —

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA1	PB10313A1	SWITCH BOARD ASSEMBLY 〈01〉	
	IC1	STR-D1706	IC	
	D1	10E6-F2	DIODE	
	D2	10E6-F2	DIODE	
	D3	10E6-F2	DIODE	
	D4	10E6-F2	DIODE	
	D5	RU1A	FR DIODE	
	D6	RU1A	FR DIODE	
	D8	AU01Z	FR DIODE	
	or	ERA48-02-T	FR DIODE	
	D9	AU01Z	FR DIODE	
	D10	AU01Z	FR DIODE	
	D11	F6P20F	FR DIODE	
	or	FML-12S	FR DIODE	
	D12	F5KQ40B	BARRIER DIODE	
	or	FMB-24	BARRIER DIODE	
	D13	AU01Z	FR DIODE	
	or	ERA48-02-T	FR DIODE	
	D14	AU01Z	FR DIODE	
	or	ERA48-02-T	FR DIODE	
	D15	RD16ES-T1B2	ZENER DIODE	
	or	UZ16BSB	ZENER DIODE	
	D26	AU01	FR DIODE	
	R1	QRZ0078-2R2	W.W.RESISTOR	2.2Ω
	R2	QRD161J-564	RESISTOR	560KΩ, 1/6W
	R3	QRD161J-334	RESISTOR	330KΩ, 1/6W
	R4	QRG029J-104	OMF RESISTOR	100KΩ, 2W
	R5	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R6	QRG029J-201	OMF RESISTOR	200Ω, 2W
	R7	QRZ0078-R39	WW RESISTOR	0.39Ω
	R9	QVZ3507-101	V RESISTOR, SR 15V ADJ	100Ω
	R11	QRD161J-333	RESISTOR	33KΩ, 1/6W
⚠	C1	QFZ9022-623	MM CAPACITOR	0.062μF
⚠	C3	QCZ9016-221K	CAPACITOR	220PF
⚠	C4	QCZ9016-221K	CAPACITOR	220PF
⚠	C5	QCZ9016-221K	CAPACITOR	220PF
⚠	C6	QCZ9016-221K	CAPACITOR	220PF
⚠	C7	QCZ9016-222M	CAPACITOR	0.0022μF
⚠	or	QCZ9048-222	CAPACITOR	0.0022μF
⚠	C8	QCZ9016-222M	CAPACITOR	0.0022μF
⚠	or	QCZ9048-222	CAPACITOR	0.0022μF
	C9	QETC1JM-475	E CAPACITOR	4.7μF, 63V
	C10	PECA0732-157	E CAPACITOR	
	C11	QCR13AK-472	CAPACITOR	0.0047μF, 1000V
	C12	QCZ0213-101Z	CAPACITOR	100PF
	C13	QFL41HJ-222	M CAPACITOR	0.0022μF, 50V
	C14	QFV41HJ-474	TF CAPACITOR	0.47μF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	or	QFV11HJ-474	TF CAPACITOR	0.47μF, 50V
	C15	QEZ0108-187Z	E CAPACITOR	180μF
⚠	C16	QCZ9016-101K	CAPACITOR	100PF
⚠	C17	QCZ9016-101K	CAPACITOR	100PF
⚠	C19	QCZ9016-101K	CAPACITOR	100PF
⚠	C20	QCZ9016-101K	CAPACITOR	100PF
	C31	QEMB1EM-228	E CAPACITOR	2200μF, 25V
	C32	QEMB1AM-398	E CAPACITOR	3900μF, 10V
	C33	QEZ0104-476Z	E CAPACITOR	47μF
	C34	QEZ0107-476Z	E CAPACITOR	47μF
	C35	QETB1EM-477	E CAPACITOR	470μF, 25V
	C36	QETB1EM-108	E CAPACITOR	1000μF, 25V
	C37	QETB1AM-108	E CAPACITOR	1000μF, 10V
	C38	QETC1JM-226	E CAPACITOR	22μF, 63V
	C39	QETC1HM-226	E CAPACITOR	22μF, 50V
	C40	QFL41HJ-102	M CAPACITOR	0.001μF, 50V
	C41	QFL41HJ-102	M CAPACITOR	0.001μF, 50V
	C42	QFL41HJ-472	CAPACITOR	0.0047μF, 50V
	L11	PU60943-330K	COIL	33μH
	L12	PU60944-330K	COIL	33μH
	L13	PU60944-330K	COIL	33μH
	L14	PU48530-101K	COIL	100μH
	L15	PU48530-101K	COIL	100μH
	L16	PU48530-8R2K	COIL	8.2μH
	L17	PU48530-8R2K	COIL	8.2μH
⚠	T1	PU60683-2	SW TRANS	
⚠	HS1	PQ44322-1-1	HEAT SINK, FOR D11, D12	
	HS2	PU60798	HEAT SINK	
⚠	LF2	PU60347	LINE FILTER	
	SLD1	PQ32558-1-1	SHIELD CASE(1)	
	CN1	PU58844-10	CAP HOUSING	
	CN2	PU58844-3	CAP HOUSING	
	CN17	PU58844-2	CAP HOUSING	

— REGULATOR BOARD ASSEMBLY (02) —

	PWBA2	PB10313A2	REGULATOR BOARD ASSEMBLY (02)
	IC2	BA10324	IC
	IC101	M54647L	IC
	Q11	2SD1856	TRANSISTOR
	or	2SD1796	TRANSISTOR
	Q12	2SC1740S	TRANSISTOR
	Q13	2SD1856	TRANSISTOR

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	or	2SD1796	TRANSISTOR	
	Q14	2SD1856	TRANSISTOR	
	or	2SD1796	TRANSISTOR	
	Q15	2SD1856	TRANSISTOR	
	or	2SD1796	TRANSISTOR	
	Q16	2SA720	TRANSISTOR	
	Q17	2SA720	TRANSISTOR	
	Q18	DTA114ES	TRANSISTOR	
	Q19	DTB123ES	TRANSISTOR	
	Q20	2SC1740S	TRANSISTOR	
	Q21	2SD1856	TRANSISTOR	
	or	2SD1796	TRANSISTOR	
	Q22	DTB114ES	TRANSISTOR	
	Q23	DTC114ES	TRANSISTOR	
	Q24	DTC114ES	TRANSISTOR	
	D16	RD6.2ES-T1B3	ZENER DIODE	
	or	UZ6.2BSC	ZENER DIODE	
	D17	RD5.1ES-T1B2	ZENER DIODE	
	or	UZ5.1BSB	ZENER DIODE	
	D18	1SS133	DIODE	
	or	MA165	DIODE	
	D19	HZ6B1TE	DIODE	
	or	HZ6B1TJ	DIODE	
	D20	RD13ES-T1B3	DIODE	
	or	UZ13BSC	ZENER DIODE	
	D21	HZS33EB1	ZENER DIODE	
	or	MTZ33AT-77	ZENER DIODE	
	D22	1SS133	DIODE	
	or	MA165	DIODE	
	D23	1SS133	DIODE	
	or	MA165	DIODE	
	D24	1SS133	DIODE	
	or	MA165	DIODE	
	D25	1SS133	DIODE	
	or	MA165	DIODE	
	D26	1SS133	DIODE	
	or	MA165	DIODE	
	D27	RD20ES-T1B2	ZENER DIODE	
	or	MTZ20BT-77	ZENER DIODE	
	D30	11ES2	DIODE	
	D31	1SS133	DIODE	
	or	MA165	DIODE	
	D32	1SS133	DIODE	
	or	MA165	DIODE	
	D33	1SS133	DIODE	
	or	MA165	DIODE	
	D34	UZ3.3BSA	ZENER DIODE	
	or	RD3.3ES-T1B1	ZENER DIODE	
	D35	1SS133	DIODE	
	or	MA165	DIODE	
	D36	11ES2	DIODE	
	D37	1SS133	DIODE	
	or	MA165	DIODE	
	R14	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R15	QRD161J-362	RESISTOR	3.6KΩ, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R16	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R17	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R18	QRD161J-622	RESISTOR	6.2KΩ, 1/6W
	R19	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R20	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R21	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R22	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R23	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R24	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R25	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R26	QVZ3244-222	V RESISTOR, SWD 5V ADJ	2.2KΩ
	R27	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R28	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R29	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R30	QRD161J-392	RESISTOR	3.9KΩ, 1/6W
	R31	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R32	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R33	QRD161J-331	RESISTOR	330Ω, 1/6W
	R34	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
⚠	R35	QRZ0077-220X	FUSIBLE RESISTOR	22Ω
⚠	R36	QRZ0077-101X	FUSIBLE RESISTOR	100Ω
	R37	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R38	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R39	QRD161J-751	RESISTOR	750Ω, 1/6W
	R40	QRD161J-221	RESISTOR	220Ω, 1/6W
	R41	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R43	QRD161J-392	RESISTOR	3.9KΩ, 1/6W
	R44	QRD181J-1R0	RESISTOR	1.0Ω, 1/8W
	R45	QRD181J-1R0	RESISTOR	1.0Ω, 1/8W
	R46	QRD181J-1R0	RESISTOR	1.0Ω, 1/8W
	R47	QRD181J-1R0	RESISTOR	1.0Ω, 1/8W
	R48	QRD181J-1R0	RESISTOR	1.0Ω, 1/8W
	R49	QRD181J-1R0	RESISTOR	1.0Ω, 1/8W
	R50	QRD181J-1R0	RESISTOR	1.0Ω, 1/8W
	R51	QRD181J-1R0	RESISTOR	1.0Ω, 1/8W
	R52	QRD181J-562	RESISTOR	5.6KΩ, 1/8W
	R53	QRD181J-562	RESISTOR	5.6KΩ, 1/8W
	R54	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R55	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R56	QRD121J-560	RESISTOR	56Ω, 1/2W
	R57	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R58	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R59	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R60	QRD161J-102	RESISTOR	1KΩ, 1/6W
	C43	QFN31HJ-102	M CAPACITOR	0.001μF, 50V
	C44	QETC1CM-107	E CAPACITOR	100μF, 16V
	C45	QETC1HM-106	E CAPACITOR	10μF, 50V
	C46	QFN31HJ-102	M CAPACITOR	0.001μF, 50V
	C47	QFN31HJ-102	M CAPACITOR	0.001μF, 50V
	C48	QETC1CM-107	E CAPACITOR	100μF, 16V
	C49	QFN31HJ-102	M CAPACITOR	0.001μF, 50V
	C50	QFN31HJ-102	M CAPACITOR	0.001μF, 50V
	C51	QETC1AM-107	E CAPACITOR	100μF, 10V
	C52	QETC1HM-476	E CAPACITOR	47μF, 50V
	C53	QETC1CM-107	E CAPACITOR	100μF, 16V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C54	QETC1HM-106	E CAPACITOR	10μF, 50V
	C55	QFN31HJ-102	M CAPACITOR	0.001μF, 50V
	C56	QFN31HJ-103	M CAPACITOR	0.01μF, 50V
	C57	QETC1AM-107	E CAPACITOR	100μF, 10V
	C58	QETC1HM-226	E CAPACITOR	22μF, 50V
	C59	QETC1HM-226	E CAPACITOR	22μF, 50V
	C60	QETC1HM-226	E CAPACITOR	22μF, 50V
	C63	QETC1CM-107	E CAPACITOR	100μF, 16V
	C64	QETC1HM-106	E CAPACITOR	10μF, 50V
	C101	QETC1EM-476	E CAPACITOR	47μF, 25V
	C102	QETC1HM-105	E CAPACITOR	1μF, 50V
⚠	RY1	PU59457	RELAY	
⚠	CL1	PU57505	FUSE CLIP, X4, FOR F1, F2	
	HS1	PQ43701-1-1	HEAT SINK	
⚠	LF1	PU60020	LINE FILTER	
⚠	TAB1	A74316	TAB, X2	
	TP1	PU55774	TEST PIN, X4, (TP1-3, GND)	
	CN4	PU58844-102	CAP HOUSING	
	CN5	PU58844-102R	CAP HOUSING	
	CN6	PU58844-107	CAP HOUSING	
	CN7	PU59555-4	CAP HOUSING	
	CN8	PU59555-108	CAP HOUSING	
	CN9	PU58844-103R	CAP HOUSING	
	CN10	PU58844-103R	CAP HOUSING	
	CN11	PU58844-103Y	CAP HOUSING	
	CN12	PU59555-108	CAP HOUSING	
	CN14	PU58844-106	CAP HOUSING	
	CN15	PU58844-3	CAP HOUSING	
	CN16	PU58844-2	CAP HOUSING	
⚠	CP1	ICP-N38	CIRCUIT PROTECTOR	
⚠	or	ICP-F38	CIRCUIT PROTECTOR	
⚠	CP2	ICP-N25	CIRCUIT PROTECTOR	
⚠	or	ICP-F25	CIRCUIT PROTECTOR	
⚠	CP3	ICP-N20	CIRCUIT PROTECTOR	
⚠	or	ICP-F20	CIRCUIT PROTECTOR	
⚠	CP4	ICP-N38	CIRCUIT PROTECTOR	
⚠	or	ICP-F38	CIRCUIT PROTECTOR	
⚠	CP101	ICP-F25	CIRCUIT PROTECTOR	

6. MECHACON BOARD ASSEMBLY (04)

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB10310A-02	MECHACON BOARD ASSEMBLY	
	IC1	M50938A-322SP	IC	
	IC2	TA8405S	IC	
	IC4	BA6222	IC	
	IC5	M50255P	IC	
	Q1	2SD1468S(RS)	TRANSISTOR	
	Q2	DTC144ES	TRANSISTOR	
	Q3	DTC144ES	TRANSISTOR	
	D1	HZS4.3EB2	ZENER DIODE	
	D2	MA165	DIODE	
	or	1SS133	DIODE	
	D3	MA165	DIODE	
	or	1SS133	DIODE	
	D4	MA165	DIODE	
	or	1SS133	DIODE	
	D5	HZS7.5EB2	ZENER DIODE	
	D6	MA165	DIODE	
	or	1SS133	DIODE	
	D7	MA165	DIODE	
	or	1SS133	DIODE	
	D8	MA165	DIODE	
	or	1SS133	DIODE	
	D9	MA165	DIODE	
	or	1SS133	DIODE	
	D10	MA165	DIODE	
	or	1SS133	DIODE	
	D11	MA165	DIODE	
	or	1SS133	DIODE	
	R1	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R2	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R3	QRD161J-122	RESISTOR	1.2KΩ, 1/6W
	R4	QRD161J-823	RESISTOR	82KΩ, 1/6W
	R5	QRD161J-471	RESISTOR	470Ω, 1/6W
	R6	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R7	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R8	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R9	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R10	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R11	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R12	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R13	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R14	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R15	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R16	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R17	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R18	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R19	QRD161J-333	RESISTOR	33KΩ, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R20	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R21	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R22	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R23	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R24	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R25	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R26	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R27	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R28	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R29	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R30	QRD161J-124	RESISTOR	120KΩ, 1/6W
	R31	QRD161J-124	RESISTOR	120KΩ, 1/6W
	R32	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R33	QRD161J-821	RESISTOR	820Ω, 1/6W
	R34	QRD161J-331	RESISTOR	330Ω, 1/6W
	R35	QRD161J-822	RESISTOR	8.2KΩ, 1/6W
	R36	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R37	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R38	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R39	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R40	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R41	QRD161J-105	RESISTOR	1MΩ, 1/6W
	R42	QRD161J-561	RESISTOR	560Ω, 1/6W
	R43	QRD161J-561	RESISTOR	560Ω, 1/6W
	RA1	QRB049J-103C	RESISTOR ARRAY	
	or	QRB049J-103	RESISTOR ARRAY	
	or	QRB047J-103	RESISTOR ARRAY	
	RA2	QRB049J-472C	RESISTOR ARRAY	
	or	QRB047J-472	NETWORK RESISTOR	
	or	QRB049J-472	RESISTOR ARRAY	
	RA3	QRB049J-103C	RESISTOR ARRAY	
	or	QRB047J-103	RESISTOR ARRAY	
	or	QRB049J-103	RESISTOR ARRAY	
	C1	QCFB1EZ-223	CAPACITOR	0.022μF, 25V
	C2	QETC1EM-335	E CAPACITOR	3.3μF, 25V
	C5	QETC1EM-106	E CAPACITOR	10μF, 25V
	C6	QETC1EM-106	E CAPACITOR	10μF, 25V
	C7	QCFB1EZ-223	CAPACITOR	0.022μF, 25V
	C8	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C9	QCFB1EZ-223	CAPACITOR	0.022μF, 25V
	C10	QCC11CK-104	CAPACITOR	0.1μF, 16V
	C11	QCXB1CM-222	CAPACITOR	0.0022μF, 16V
	C12	QCXB1CM-222	CAPACITOR	0.0022μF, 16V
	L1	PU53223-R22G	COIL	0.22μH
	CF1	PU60414	CERAMIC FILTER	
	or	PU60942-Z	CERAMIC FILTER	
	K1	PU60281-5	FERRITE BEADS	
	K2	PU60281-5	FERRITE BEADS	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	WR1	PW30112-L0AF6AH	PARALLEL WIRE
		or PW30117-L0AG6AH	PARALLEL WIRE
	CN1	PU59934-17	WIRE HOLDER
	CN2	PU58844-6	CAP HOUSING
	CN4	PU58930-14	CAP HOUSING
	CN5	PU58930-12	CAP HOUSING
	CN6	PU59555-10	CAP HOUSING
	CN9	PU59555-8	CAP HOUSING
	CN12	PU59555-7	CAP HOUSING
	CN13	PU58844-3	CAP HOUSING
	CN14	PU58928-18	CAP HOUSING
	CN15	PU58928-13	CAP HOUSING
	CN16	PU58928-16	CAP HOUSING
	CN17	PU58928-15	CAP HOUSING
	CN18	PU59555-6	CAP HOUSING
	CN20	PU59555-6	CAP HOUSING

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7. VIDEO BOARD ASSEMBLY (05)

	PWBA	PB10154J	VIDEO BOARD ASSEMBLY
	CL1	PU56729-2	WIRE CLAMP
	CL2	PU55379	MINI CLAMP
	HN1	PU58018-1-2	PWB HINGE, X2
	SPC1	PU60010	SPACER, X4
	TP1	PU57545	TEST PIN, X38
	TP2	PU56008	TEST-PIN
	CN1	PU58844-2	CAP HOUSING
	CN2	PU58844-6	CAP HOUSING
	CN3	PU58844-3	CAP HOUSING
	CN4	PU59555-10	CAP HOUSING
	CN5	PU58844-5	CAP HOUSING
	CN6	PU58844-4	CAP HOUSING
	CN7	PU58844-5	CAP HOUSING
	CN8	PU58844-5	CAP HOUSING
	CN9	PU58844-6	CAP HOUSING
	CN10	PU58844-4	CAP HOUSING
	CN12	PU59555-5	CAP HOUSING
	CN14	PU58844-2	CAP HOUSING

— Y SECTION —

	IC1	PB20291A	Y MODULE BOARD ASSY
	IC2	NJM2234D	IC
	IC3	M51288SP	IC
	IC4	HA118070	IC
	IC5	NJM2233AD	IC
	IC6	PB20290A-02	JOG MODULE BOARD ASSY
	IC7	M52055P	IC
	IC8	NJM2233AD	IC
	IC9	PB20285A	Y MODULE BOARD ASSY
	IC10	PB20298A	Y MODULE BOARD ASSY
	IC11	PB20286A-02	YNR MODULE BOARD ASSY
	IC12	VC2063S	IC
	IC13	TC74HC04AP	IC
		or MC74HC04AN	IC
	IC14	AN6041	IC
	IC15	BA7021	IC
	IC16	BU4066B	IC
	Q1	2SC1740S(QRS)	TRANSISTOR
	Q2	DTC124ES	TRANSISTOR
	Q3	DTC124ES	TRANSISTOR
	Q4	2SC1740S(QRS)	TRANSISTOR
	Q5	2SC1740S(QRS)	TRANSISTOR
	Q6	DTC124ES	TRANSISTOR
	Q7	DTC124ES	TRANSISTOR
	Q8	2SA933S	TRANSISTOR
	Q9	2SA933S	TRANSISTOR
	Q10	2SC1740S(QRS)	TRANSISTOR
	Q11	2SA933S	TRANSISTOR
	Q12	2SC1740S(QRS)	TRANSISTOR
	Q13	2SC1740S(QRS)	TRANSISTOR
	Q14	2SA933S	TRANSISTOR
	Q15	2SA933S	TRANSISTOR
	Q16	2SA933S	TRANSISTOR
	Q17	DTC124ES	TRANSISTOR
	Q18	2SK361(C)	FE TRANSISTOR
	Q19	2SA933S	TRANSISTOR
	Q20	2SC1740S(QRS)	TRANSISTOR
	Q21	2SC1740S(QRS)	TRANSISTOR
	Q22	DTC144ES	TRANSISTOR
	Q23	2SA933S	TRANSISTOR
	Q24	2SA933S	TRANSISTOR
	Q25	2SA933S	TRANSISTOR
	Q26	2SC1740S(QRS)	TRANSISTOR
	Q27	DTC124ES	TRANSISTOR
	Q28	DTC124ES	TRANSISTOR
	Q29	DTA124ES	TRANSISTOR
	Q30	2SC1740S(QRS)	TRANSISTOR
	Q31	2SC1740S(QRS)	TRANSISTOR
	Q32	DTA124ES	TRANSISTOR
	Q33	2SA933S	TRANSISTOR
	Q34	2SC1740S(RS)	TRANSISTOR
	Q35	2SB851Q, R	TRANSISTOR
	Q36	DTA124ES	TRANSISTOR
	Q37	DTA124ES	TRANSISTOR
	Q38	DTC124ES	TRANSISTOR
	Q39	2SC3313CTA	TRANSISTOR
	Q40	2SC3313CTA	TRANSISTOR
	Q41	2SC1740S(QRS)	TRANSISTOR
	Q42	2SC2647C	TRANSISTOR
	Q43	2SC2647C	TRANSISTOR

#△	REF No.	PART No.	PART NAME, DESCRIPTION
	Q45	2SC1740S(QRS)	TRANSISTOR
	Q46	2SA933S	TRANSISTOR
	Q47	2SC1740S(QRS)	TRANSISTOR
	Q48	2SC1740S(QRS)	TRANSISTOR
	Q49	2SA933S	TRANSISTOR
	Q50	2SA933S	TRANSISTOR
	Q51	2SA933S	TRANSISTOR
	Q52	2SC1740S(QRS)	TRANSISTOR
	Q53	DTC124ES	TRANSISTOR
	Q54	DTC144ES	TRANSISTOR
	Q55	2SA933S	TRANSISTOR
	D1	1SS133	DIODE
	or	MA165	DIODE
	D2	1SS133	DIODE
	or	MA165	DIODE
	D3	1SS133	DIODE
	or	MA165	DIODE
	D4	1SS133	DIODE
	or	MA165	DIODE
	D5	1SS133	DIODE
	or	MA165	DIODE
	D6	1SS133	DIODE
	or	MA165	DIODE
	D7	1SS133	DIODE
	or	MA165	DIODE
	D8	1SS133	DIODE
	or	MA165	DIODE
	D10	1SS133	DIODE
	or	MA165	DIODE
	D11	1SS133	DIODE
	or	MA165	DIODE
	D12	1SS133	DIODE
	or	MA165	DIODE
	D13	1SS133	DIODE
	or	MA165	DIODE
	D16	1SS133	DIODE
	or	MA165	DIODE
	D17	1SS133	DIODE
	or	MA165	DIODE
	D18	1SS133	DIODE
	or	MA165	DIODE
	D20	OA90UF	DIODE
	D21	OA90UF	DIODE
	D22	1SS133	DIODE
	or	MA165	DIODE
	D23	1SS133	DIODE
	or	MA165	DIODE
	D24	1SS133	DIODE
	or	MA165	DIODE
	D26	1SS133	DIODE
	or	MA165	DIODE
	D27	1SS133	DIODE
	or	MA165	DIODE
	D28	1SS133	DIODE
	or	MA165	DIODE
	D29	1SS133	DIODE
	or	MA165	DIODE

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	D31	1SS133	DIODE	
	or	MA165	DIODE	
	D32	1SS133	DIODE	
	or	MA165	DIODE	
	D34	RD9.1ES-T1B2	ZENER DIODE	
	R1	QRD161J-562	RESISTOR	5.6KΩ, 1/6W
	R2	QRD161J-822	RESISTOR	8.2KΩ, 1/6W
	R3	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R4	QRD161J-182	RESISTOR	1.8KΩ, 1/6W
	R5	QRD161J-821	RESISTOR	820Ω, 1/6W
	R6	QRD161J-681	RESISTOR	680Ω, 1/6W
	R7	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R8	QRD161J-273	RESISTOR	27KΩ, 1/6W
	R9	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R10	QRD161J-681	RESISTOR	680Ω, 1/6W
	R11	QRD161J-331	RESISTOR	330Ω, 1/6W
	R12	QRD161J-331	RESISTOR	330Ω, 1/6W
	R13	QRD161J-475	RESISTOR	4.7MΩ, 1/6W
	R14	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R15	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R16	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R17	QRD161J-821	RESISTOR	820Ω, 1/6W
	R18	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R19	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R20	QRD161J-122	RESISTOR	1.2KΩ, 1/6W
	R21	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R22	QRD161J-681	RESISTOR	680Ω, 1/6W
	R23	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R24	QRD161J-122	RESISTOR	1.2KΩ, 1/6W
	R25	QRD161J-562	RESISTOR	5.6KΩ, 1/6W
	R26	QRD121J-181	RESISTOR	180Ω, 1/2W
	R27	QVZ3518-102	V RESISTOR, 0.25H DL VIDEO LEV	1KΩ
	R28	QRD161J-471	RESISTOR	470Ω, 1/6W
	R29	QRD161J-821	RESISTOR	820Ω, 1/6W
	R30	QRD161J-561	RESISTOR	560Ω, 1/6W
	R31	QRD161J-471	RESISTOR	470Ω, 1/6W
	R32	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R33	QRD161J-561	RESISTOR	560Ω, 1/6W
	R34	QRD161J-182	RESISTOR	1.8KΩ, 1/6W
	R35	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R36	QRD161J-221	RESISTOR	220Ω, 1/6W
	R37	QRD161J-271	RESISTOR	270Ω, 1/6W
	R38	QRD161J-471	RESISTOR	470Ω, 1/6W
	R39	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R40	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R41	QRD161J-562	RESISTOR	5.6KΩ, 1/6W
	R42	QVZ3518-103	V RESISTOR, SHARPNESS PRESET	10KΩ
	R43	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R44	QRD161J-331	RESISTOR	330Ω, 1/6W
	R45	QRD161J-331	RESISTOR	330Ω, 1/6W
	R46	QRD161J-331	RESISTOR	330Ω, 1/6W
	R47	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R48	QRD161J-391	RESISTOR	390Ω, 1/6W
	R49	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R50	QRD161J-102	RESISTOR	1KΩ, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R51	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R52	QRD161J-683	RESISTOR	68KΩ, 1/6W
	R53	QRD161J-122	RESISTOR	1.2KΩ, 1/6W
	R54	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R55	QRD161J-391	RESISTOR	390Ω, 1/6W
	R57	QVZ3518-151	V RESISTOR, SUB EMPHA IN LEVEL	150Ω
	R58	QRD161J-241	RESISTOR	240Ω, 1/6W
	R60	QRD161J-273	RESISTOR	27KΩ, 1/6W
	R61	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R62	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R63	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R64	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R65	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R66	QRD161J-561	RESISTOR	560Ω, 1/6W
	R67	QRD161J-821	RESISTOR	820Ω, 1/6W
	R68	QRD161J-471	RESISTOR	470Ω, 1/6W
	R69	QRD161J-123	RESISTOR	12KΩ, 1/6W
	R70	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R71	QRD161J-122	RESISTOR	1.2KΩ, 1/6W
	R72	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R73	QRD161J-822	RESISTOR	8.2KΩ, 1/6W
	R74	QRD161J-182	RESISTOR	1.8KΩ, 1/6W
	R75	QVZ3518-102	V RESISTOR, EE Y LEVEL	1KΩ
	R76	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
	R77	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R78	QRD161J-183	RESISTOR	18KΩ, 1/6W
	R79	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R80	QRD161J-681	RESISTOR	680Ω, 1/6W
	R81	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R82	QRD161J-393	RESISTOR	39KΩ, 1/6W
	R83	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R84	QRD161J-154	RESISTOR	150KΩ, 1/6W
	R85	QRD161J-124	RESISTOR	120KΩ, 1/6W
	R87	QRD161J-394	RESISTOR	390KΩ, 1/6W
	R88	QRD161J-475	RESISTOR	4.7MΩ, 1/6W
	R89	QRD161J-562	RESISTOR	5.6KΩ, 1/6W
	R91	QVZ3518-473	V RESISTOR, VHS PB Y LEVEL	47KΩ
	R92	QVZ3518-473	V RESISTOR, S-VHS PB Y LEVEL	47KΩ
	R93	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R94	QRD161J-821	RESISTOR	820Ω, 1/6W
	R95	QVZ3518-102	V RESISTOR, VHS REC FM LEVEL	1KΩ
	R96	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R97	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R98	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R99	QRD161J-681	RESISTOR	680Ω, 1/6W
	R100	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R101	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R102	QRD161J-561	RESISTOR	560Ω, 1/6W
	R103	QVZ3518-102	V RESISTOR, S-VHS REC FM LEVEL	1KΩ
	R104	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R105	QRD161J-331	RESISTOR	330Ω, 1/6W
	R106	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R107	QVZ3518-151	V RESISTOR, Y COMB GAIN ADJ	150Ω
	R108	QVZ3518-473	V RESISTOR, 4H DELAYED CHROMA	47KΩ
	R109	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R110	QVZ3518-473	V RESISTOR, 2H DELAYED CHROMA	47KΩ

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R111	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R112	QRD161J-391	RESISTOR	390Ω, 1/6W
	R113	QRD161J-391	RESISTOR	390Ω, 1/6W
	R114	QRD161J-391	RESISTOR	390Ω, 1/6W
	R115	QRD161J-391	RESISTOR	390Ω, 1/6W
	R116	QRD161J-391	RESISTOR	390Ω, 1/6W
	R117	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R118	QVZ3520-223	V RESISTOR, Y COMB GAIN	22KΩ
	R119	QVZ3520-472	V RESISTOR, Y COMB PHASE	4.7KΩ
	R120	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R122	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R123	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R124	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R125	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R126	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R127	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R128	QRD161J-562	RESISTOR	5.6KΩ, 1/6W
	R129	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R130	QRD161J-393	RESISTOR	39KΩ, 1/6W
	R131	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
	R132	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R133	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R135	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R136	QRD161J-393	RESISTOR	39KΩ, 1/6W
	R137	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R138	QRD161J-561	RESISTOR	560Ω, 1/6W
	R139	QRD161J-182	RESISTOR	1.8KΩ, 1/6W
	R140	QRD161J-271	RESISTOR	270Ω, 1/6W
	R141	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R142	QRD161J-392	RESISTOR	3.9KΩ, 1/6W
	R145	QRD161J-562	RESISTOR	5.6KΩ, 1/6W
	R146	QRD161J-682	RESISTOR	6.8KΩ, 1/6W
⚠	R147	QRD121J-680	RESISTOR	68Ω, 1/2W
	R148	QRD161J-271	RESISTOR	270Ω, 1/6W
	R149	QRD161J-101	RESISTOR	100Ω, 1/6W
	R150	QRD161J-101	RESISTOR	100Ω, 1/6W
	R151	QRD161J-393	RESISTOR	39KΩ, 1/6W
	R152	QRD161J-822	RESISTOR	8.2KΩ, 1/6W
	R153	QRD161J-122	RESISTOR	1.2KΩ, 1/6W
	R154	QRD161J-271	RESISTOR	270Ω, 1/6W
	R155	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R156	QRD161J-221	RESISTOR	220Ω, 1/6W
	R157	QRD161J-221	RESISTOR	220Ω, 1/6W
	R161	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R163	QVZ3518-681	V RESISTOR, 0.25H DL VIDEO	680Ω
	R164	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R165	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R166	QRD161J-151	RESISTOR	150Ω, 1/6W
	R167	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R168	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R169	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R170	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R171	QRD161J-121	RESISTOR	120Ω, 1/6W
	R172	QRD161J-101	RESISTOR	100Ω, 1/6W
	R173	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R174	QRD161J-102	RESISTOR	1KΩ, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R175	QRD161J-331	RESISTOR	330Ω, 1/6W
	R176	QRD161J-392	RESISTOR	3.9KΩ, 1/6W
	R177	ERT-D2FHL332S	THERMISTOR	
	R178	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
	R179	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R180	QRD161J-122	RESISTOR	1.2KΩ, 1/6W
	R181	QRD161J-562	RESISTOR	5.6KΩ, 1/6W
	R182	QRD161J-101	RESISTOR	100Ω, 1/6W
	R183	QRD161J-101	RESISTOR	100Ω, 1/6W
	R184	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
	R185	QRD161J-471	RESISTOR	470Ω, 1/6W
	R186	QRD161J-391	RESISTOR	390Ω, 1/6W
	R187	QRD161J-621	RESISTOR	620Ω, 1/6W
	R188	QRD161J-392	RESISTOR	3.9KΩ, 1/6W
	R189	QRD161J-181	RESISTOR	180Ω, 1/6W
	R190	QRD161J-821	RESISTOR	820Ω, 1/6W
	R191	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R192	ERT-D2FGL102S	THERMISTOR	
	R193	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R194	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R195	QRD161J-561	RESISTOR	560Ω, 1/6W
	R196	QRD161J-561	RESISTOR	560Ω, 1/6W
	R197	QVZ3520-471	V RESISTOR, Y COMB	470Ω
	R198	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R199	QRD161J-121	RESISTOR	120Ω, 1/6W
	R200	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R201	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R204	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R205	QRD161J-102	RESISTOR	1KΩ, 1/6W
⚠	R206	QRD121J-680	RESISTOR	68Ω, 1/2W
	R209	QRD161J-474	RESISTOR	470KΩ, 1/6W
	R210	QRD161J-101	RESISTOR	100Ω, 1/6W
	R211	QRD161J-101	RESISTOR	100Ω, 1/6W
	R212	QRD161J-122	RESISTOR	1.2KΩ, 1/6W
	C1	QCSB1HJ-560	CAPACITOR	56PF, 50V
	C2	QCBB1HJ-101	CAPACITOR	100PF, 50V
	C3	QCBB1HJ-181	CAPACITOR	180PF, 50V
	C4	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C5	QETC1HM-224	E CAPACITOR	0.22μF, 50V
	C6	QETC0JM-337	E CAPACITOR	330μF, 6.3V
	C7	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C8	QCSB1HJ-560	CAPACITOR	56PF, 50V
	C9	QETC1HM-105	E CAPACITOR	1μF, 50V
	C10	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C11	QCSB1HJ-680	CAPACITOR	68PF, 50V
	C13	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C14	QETC1HM-225	E CAPACITOR	2.2μF, 50V
	C15	QFM41HK-563	M CAPACITOR	0.056μF, 50V
	C16	QCBB1HJ-181	CAPACITOR	180PF, 50V
	C17	QCBB1HJ-391	CAPACITOR	390PF, 50V
	C18	QETC1HM-225	E CAPACITOR	2.2μF, 50V
	C19	QETC1CM-106	E CAPACITOR	10μF, 16V
	C20	QETC1EM-335	E CAPACITOR	3.3μF, 25V
	C21	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C22	QCVB1CN-103	CAPACITOR	0.01μF, 16V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C23	QETC1CM-106	E CAPACITOR	10μF, 16V
	C24	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C25	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C26	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C27	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C28	QEK61EM-475	E CAPACITOR	4.7μF, 25V
	C29	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C30	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C31	QEK61EM-475	E CAPACITOR	4.7μF, 25V
	C32	QEK61EM-475	E CAPACITOR	4.7μF, 25V
	C33	QER61AM-226	E CAPACITOR	22μF, 10V
	C34	QETC0JM-337	E CAPACITOR	330μF, 6.3V
	C35	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C36	QEP61EM-475	NP E CAPACITOR	4.7μF, 25V
	C37	QER61EM-475	E CAPACITOR	4.7μF, 25V
	C38	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C40	QEK60JM-476	E CAPACITOR	47μF, 6.3V
	C41	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C42	QETC1CM-106	E CAPACITOR	10μF, 16V
	C43	QEK61CM-106	E CAPACITOR	10μF, 16V
	C44	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C45	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C46	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C47	QETC1CM-106	E CAPACITOR	10μF, 16V
	C48	QETC1CM-106	E CAPACITOR	10μF, 16V
	C49	QETC1CM-106	E CAPACITOR	10μF, 16V
	C50	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C51	QCSB1HJ-390	CAPACITOR	39PF, 50V
	C52	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C53	QETC1CM-476	E CAPACITOR	47μF, 16V
	C54	QETC1CM-106	E CAPACITOR	10μF, 16V
	C55	QEK61CM-106	E CAPACITOR	10μF, 16V
	C56	QEK61CM-106	E CAPACITOR	10μF, 16V
	C57	QEK61CM-106	E CAPACITOR	10μF, 16V
	C58	QEK61CM-106	E CAPACITOR	10μF, 16V
	C60	QEK61CM-476	E CAPACITOR	47μF, 16V
	C61	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C62	QCSB1HJ-470	CAPACITOR	47PF, 50V
	C63	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C64	QCSB1HJ-470	CAPACITOR	47PF, 50V
	C65	QEK60JM-476	E CAPACITOR	47μF, 6.3V
	C66	QEK61CM-106	E CAPACITOR	10μF, 16V
	C67	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C68	QEK61CM-106	E CAPACITOR	10μF, 16V
	C69	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C70	QEK61CM-476	E CAPACITOR	47μF, 16V
	C74	QCSB1HJ-560	CAPACITOR	56PF, 50V
	C76	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C77	QETC1EM-335	E CAPACITOR	3.3μF, 25V
	C78	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C79	QETC1CM-106	E CAPACITOR	10μF, 16V
	C80	QETC1CM-106	E CAPACITOR	10μF, 16V
	C81	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C82	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C83	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C84	QCBB1HJ-121	CAPACITOR	120PF, 50V
	C85	QCSB1HJ-560	CAPACITOR	56PF, 50V

#⚠ REF.No.	PART No.	PART NAME, DESCRIPTION	
C86	QEK61CM-106	E CAPACITOR	10μF, 16V
C87	QCSB1HJ-150	CAPACITOR	15PF, 50V
C88	QEK61HM-225	E CAPACITOR	2.2μF, 50V
C89	QEK61CM-106	E CAPACITOR	10μF, 16V
C90	QEK51CM-476	E CAPACITOR	47μF, 16V
C91	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C92	QETC1CM-106	E CAPACITOR	10μF, 16V
C93	QCBB1HJ-101	CAPACITOR	100PF, 50V
C94	QCSB1HJ-270	CAPACITOR	27PF, 50V
C95	QCSB1HJ-180	CAPACITOR	18PF, 50V
C96	QETC1HM-335	E CAPACITOR	3.3μF, 50V
C97	QCBB1HJ-151	CAPACITOR	150PF, 50V
C98	QETC1HM-105	E CAPACITOR	1μF, 50V
C99	QED60JM-127	E CAPACITOR	120μF, 6.3V
C100	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C101	QETC0JM-337	E CAPACITOR	330μF, 6.3V
C102	QCSB1HJ-120	CAPACITOR	12PF, 50V
C103	QCBB1HJ-121	CAPACITOR	120PF, 50V
C104	QCBB1HJ-121	CAPACITOR	120PF, 50V
C105	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C106	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C107	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C108	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C109	QCBB1HJ-101	CAPACITOR	100PF, 50V
C110	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C111	QETC0JM-476	E CAPACITOR	47μF, 6.3V
C112	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C113	QCBB1HJ-101	CAPACITOR	100PF, 50V
C114	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C115	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C116	QCBB1HJ-101	CAPACITOR	100PF, 50V
C117	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C118	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C119	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C120	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C121	QEK61CM-106	E CAPACITOR	10μF, 16V
C122	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C123	QETC1HM-105	E CAPACITOR	1μF, 50V
C124	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C125	QETC1CM-476	E CAPACITOR	47μF, 16V
C126	QEK61AM-476	E CAPACITOR	47μF, 10V
C127	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C130	QETC0JM-476	E CAPACITOR	47μF, 6.3V
C131	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C132	QETC1AM-476	E CAPACITOR	47μF, 10V
C133	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C134	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C135	QETC1CM-476	E CAPACITOR	47μF, 16V
C136	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C137	QETC1CM-476	E CAPACITOR	47μF, 16V
C138	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C139	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C140	QETC0JM-476	E CAPACITOR	47μF, 6.3V
C141	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C142	QEN61HM-105	NP E CAPACITOR	1μF, 50V
C143	QETC1HM-104	E CAPACITOR	0.1μF, 50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C144	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C146	QCSB1HJ-220	CAPACITOR	22PF, 50V
C147	QCBB1HJ-101	CAPACITOR	100PF, 50V
C148	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C149	QCSB1HJ-560	CAPACITOR	56PF, 50V
C150	QCSB1HJ-390	CAPACITOR	39PF, 50V
C151	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C152	QEK61CM-336	E CAPACITOR	33μF, 16V
C153	QCSB1HK-5R6	CAPACITOR	5.6PF, 50V
C154	QCSB1HJ-390	CAPACITOR	39PF, 50V
C155	QCSB1HJ-120	CAPACITOR	12PF, 50V
C156	QCSB1HJ-220	CAPACITOR	22PF, 50V
C157	QCBB1HJ-181	CAPACITOR	180PF, 50V
C159	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C160	QCSB1HJ-151	CAPACITOR	150PF, 50V
C162	QEK61CM-106	E CAPACITOR	10μF, 16V
C163	QEK61CM-106	E CAPACITOR	10μF, 16V
C165	QEK61CM-476	E CAPACITOR	47μF, 16V
C166	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C167	QETC1CM-107	E CAPACITOR	100μF, 16V
C168	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C169	QETC1CM-106	E CAPACITOR	10μF, 16V
C171	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C172	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C173	QCT25CH-470	CAPACITOR	47PF
C174	QCBB1HJ-471	CAPACITOR	470PF, 50V
C175	QCC31CJ-563	CAPACITOR	0.056μF, 16V
C178	QCVC1CN-103	CAPACITOR	0.01μF, 16V
C179	QCSB1HJ-470	CAPACITOR	47PF, 50V
C180	QCSB1HJ-220	CAPACITOR	22PF, 50V
C183	QCSB1HJ-390	CAPACITOR	39PF, 50V
C184	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C185	QCSB1HK-3R9	CAPACITOR	3.9PF, 50V
L1	PU59152-220J	COIL	22μH
L2	PU48530-101K	COIL	100μH
L3	PU48530-101K	COIL	100μH
L4	PU48530-101K	COIL	100μH
L5	PU48530-101K	COIL	100μH
L6	PU48530-101K	COIL	100μH
L7	PU48530-101K	COIL	100μH
L8	PU48530-101K	COIL	100μH
L9	PU48530-101K	COIL	100μH
L10	PU48530-101K	COIL	100μH
L11	PU48530-101K	COIL	100μH
L12	PU48530-101K	COIL	100μH
L13	PU59152-220J	COIL	22μH
L14	PU48530-101K	COIL	100μH
L15	PU48530-101K	COIL	100μH
L16	PU59152-820J	COIL	82μH
L17	PU48530-101K	COIL	100μH
L18	PU59152-560J	COIL	56μH
L19	PU48530-101K	COIL	100μH
L20	PU48530-471K	COIL	470μH
L21	PU59152-150J	COIL	15μH

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	L22	PU48530-101K	COIL	100μH
	L23	PU48530-471K	COIL	470μH
	L24	PU48530-560J	COIL	56μH
	L25	PU59152-221J	COIL	220μH
	L26	PU59152-560J	COIL	56μH
	L27	PU48530-101K	COIL	100μH
	L28	PU48530-101K	COIL	100μH
	L29	PU48530-101K	COIL	100μH
	L30	PU60165-8R2G	COIL	8.2μH
	L31	PU60165-8R2G	COIL	8.2μH
	L32	PU48530-101K	COIL	100μH
	L33	PU59152-180J	COIL	18μH
	L35	PU59152-1R0K	COIL	1.0μH
	L36	PU59152-1R0K	COIL	1.0μH
	L38	PU59152-5R6J	COIL	5.6μH
	L39	PU48530-101K	COIL	100μH
	L40	PU59152-820J	COIL	82μH
	L41	PU59152-470J	COIL	47μH
	L42	PU59152-221J	COIL	220μH
	L43	PU48530-101K	COIL	100μH
	L44	PU59152-151J	COIL	150μH
	EQ1	PU60099	EQUALIZER	
	EQ2	PU60809	EQUALIZER	
	EQ3	PU60810	EQUALIZER	
	LPF1	PU60813	LOW & BAND PASS FILTER	
	LPF2	PU60737	LOW PASS FILTER	
	LPF3	PU60806-2	LOW PASS FILTER	
	BPF2	PU60921	BAND PASS FILTER	
	BPF3	PU60808-2	BAND PASS FILTER	
	DL1	PU60815	2H DELAY LINE	
	DL3	PU61081	1/4H DELAY LINE	
⚠	X101	PU60438	CRYSTAL RESONATOR	
	T1	PU60814	COIL	
	T2	PU60814	COIL, 2H DL CHROMA	

— COLOR SECTION —

	IC301	PB20287A-03	COLOR MODULE ASSY
	IC302	PB20289A-02	JOG MODULE ASSY
	IC303	NJM2233AD	IC
	IC401	BA7106LS	IC
	or	XRA7106LS	IC
	Q301	2SA933S	TRANSISTOR
	Q302	DTC144WS	TRANSISTOR
	Q303	DTA124ES	TRANSISTOR

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	Q304	2SC1740S(QRS)	TRANSISTOR
	Q305	2SC1740S(QRS)	TRANSISTOR
	Q307	2SC2021Q, R, S	TRANSISTOR
	Q308	2SA937	TRANSISTOR
	Q309	2SC1740S(QRS)	TRANSISTOR
	Q310	DTC124ES	TRANSISTOR
	Q311	2SC1740S(QRS)	TRANSISTOR
	Q312	DTC114ES	TRANSISTOR
	Q313	DTC114ES	TRANSISTOR
	Q314	DTC144WS	TRANSISTOR
	Q315	2SC1740S(QRS)	TRANSISTOR
	Q316	2SA933S	TRANSISTOR
	Q317	2SC1740S(QRS)	TRANSISTOR
	Q318	2SC1740S(QRS)	TRANSISTOR
	Q319	2SC1740S(QRS)	TRANSISTOR
	Q320	DTC124ES	TRANSISTOR
	Q323	DTC124ES	TRANSISTOR
	Q324	DTC124ES	TRANSISTOR
	Q326	2SA933S	TRANSISTOR
	Q327	2SA933S(QRS)	TRANSISTOR
	Q331	DTC124ES	TRANSISTOR
	Q332	2SC1740S(QRS)	TRANSISTOR
	Q401	DTA124ES	TRANSISTOR
	Q402	DTA124ES	TRANSISTOR
	Q403	DTC124ES	TRANSISTOR
	D301	1SS133	DIODE
	or	MA165	DIODE
	D302	1SS133	DIODE
	or	MA165	DIODE
	D311	1SS133	DIODE
	or	MA165	DIODE
	D312	1SS133	DIODE
	or	MA165	DIODE
	D313	1SS133	DIODE
	or	MA165	DIODE
	D314	1SS133	DIODE
	or	MA165	DIODE
	D315	1SS133	DIODE
	or	MA165	DIODE
	D321	1SS133	DIODE
	or	MA165	DIODE
	D322	1SS133	DIODE
	or	MA165	DIODE
	D401	1SS133	DIODE
	or	MA165	DIODE
	D402	1SS133	DIODE
	or	MA165	DIODE
	D403	1SS133	DIODE
	or	MA165	DIODE

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	R302	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R303	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R304	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R305	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R307	QRD161J-225	RESISTOR	2.2MΩ, 1/6W
	R308	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R309	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R310	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R311	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R312	QRD161J-561	RESISTOR	560Ω, 1/6W
	R313	QRD161J-561	RESISTOR	560Ω, 1/6W
	R314	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R315	QRD161J-471	RESISTOR	470Ω, 1/6W
	R316	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R319	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R320	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R321	QRD161J-561	RESISTOR	560Ω, 1/6W
	R322	QRD161J-471	RESISTOR	470Ω, 1/6W
	R323	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
	R324	QRD161J-391	RESISTOR	390Ω, 1/6W
	R325	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R326	QRD161J-561	RESISTOR	560Ω, 1/6W
	R327	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R328	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R329	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R330	QRD161J-561	RESISTOR	560Ω, 1/6W
	R331	QRD161J-561	RESISTOR	560Ω, 1/6W
	R332	QRD161J-393	RESISTOR	39KΩ, 1/6W
	R333	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R334	QRD161J-221	RESISTOR	220Ω, 1/6W
	R335	QRD161J-391	RESISTOR	390Ω, 1/6W
	R336	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R337	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R338	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R339	QRD161J-151	RESISTOR	150Ω, 1/6W
	R340	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R341	QRD161J-391	RESISTOR	390Ω, 1/6W
	R342	QRD161J-561	RESISTOR	560Ω, 1/6W
	R343	QRD161J-393	RESISTOR	39KΩ, 1/6W
	R344	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R345	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R346	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R347	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R348	QRD161J-391	RESISTOR	390Ω, 1/6W
	R349	QRD161J-821	RESISTOR	820Ω, 1/6W
	R350	QRD161J-471	RESISTOR	470Ω, 1/6W
	R351	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R352	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R353	QVZ3518-222	V RESISTOR, LP REC COLOR	2.2KΩ
	R354	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R355	QVZ3518-222	V RESISTOR, SP REC COLOR	2.2KΩ
	R357	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R358	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R359	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R360	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R361	QRD161J-102	RESISTOR	1KΩ, 1/6W

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	R362	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R363	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R364	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R366	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R367	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R368	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R371	QRD161J-182	RESISTOR	1.8KΩ, 1/6W
	R372	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R401	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R402	QRD161J-914	RESISTOR	910KΩ, 1/6W
	R403	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R404	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R405	QRD161J-273	RESISTOR	27KΩ, 1/6W
	C301	QETC1HM-105	E CAPACITOR	1μF, 50V
	C302	QETC1HM-105	E CAPACITOR	1μF, 50V
	C303	QCC31CJ-223	CAPACITOR	0.022μF, 16V
	C304	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C305	QETC1HM-105	E CAPACITOR	1μF, 50V
	C307	QCSB1HJ-330	CAPACITOR	33PF, 50V
	C308	QCSB1HJ-390	CAPACITOR	39PF, 50V
	C309	QFN41HJ-473	M CAPACITOR	0.047μF, 50V
	C310	QCSB1HJ-560	CAPACITOR	56PF, 50V
	C311	QEK60JM-476	E CAPACITOR	47μF, 6.3V
	C312	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C314	QCSB1HJ-820	CAPACITOR	82PF, 50V
	C315	QCC31CK-682	CAPACITOR	0.0068μF, 16V
	C316	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C317	QCXB1CN-222	CAPACITOR	0.0022μF, 16V
	C318	QCSB1HJ-820	CAPACITOR	82PF, 50V
	C320	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C321	QETC1HM-105	E CAPACITOR	1μF, 50V
	C322	QETC1HM-104	E CAPACITOR	0.1μF, 50V
	C323	QEK61EM-475	E CAPACITOR	4.7μF, 25V
	C324	QCC31CK-104	CAPACITOR	0.1μF, 16V
	C325	QETC0JM-337	E CAPACITOR	330μF, 6.3V
	C326	QCC31CK-563	CAPACITOR	0.056μF, 16V
	C327	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C328	QETC1EM-335	E CAPACITOR	3.3μF, 25V
	C329	QETC0JM-337	E CAPACITOR	330μF, 6.3V
	C330	QETB1HM-474	E CAPACITOR	0.47μF, 50V
	C331	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C332	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C333	QEK61HM-474	E CAPACITOR	0.47μF, 50V
	C334	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C335	QETC1CM-106	E CAPACITOR	10μF, 16V
	C336	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C337	QCBB1HJ-121	CAPACITOR	120PF, 50V
	C338	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C339	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C341	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C342	QCSB1HJ-100	CAPACITOR	10PF, 50V
	C343	QCVB1CN-103	CAPACITOR	0.01μF, 16V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C345	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C346	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C347	QCSB1HJ-390	CAPACITOR	39PF, 50V
C348	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C349	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C350	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C351	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C352	QEK60JM-476	E CAPACITOR	47μF, 6.3V
C353	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C355	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C401	QEK61CM-106	E CAPACITOR	10μF, 16V
C402	QEK61EM-335	E CAPACITOR	3.3μF, 25V
C403	QCSB1HJ-471	CAPACITOR	470PF, 50V
C404	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C405	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C406	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C407	QFN31HJ-471	M CAPACITOR	470PF, 50V
C408	QCSB1HJ-470	CAPACITOR	47PF, 50V
C409	QCXB1CN-472	CAPACITOR	0.0047μF, 16V
C410	QCSB1HK-4R7	CAPACITOR	4.7PF, 50V
C411	QCSB1HJ-200	CAPACITOR	20PF, 50V
C412	QEK60JM-107	E CAPACITOR	100μF, 6.3V
C413	QCVB1CN-103	CAPACITOR	0.01μF, 16V
L301	PU48530-101K	COIL	100μH
L303	PU48530-101K	COIL	100μH
L304	PU59152-390J	COIL	39μH
L305	PU48530-222J	COIL	2.2mH
L306	PU59152-221J	COIL	220μH
L307	PU48530-821J	COIL	820μH
L308	PU48530-101K	COIL	100μH
L309	PU59152-100J	COIL	10μH
L310	PU59152-100J	COIL	10μH
L311	PU59153-822J	COIL	8.2mH
L312	PU59153-101K	COIL	100μH
L313	PU59153-101K	COIL	100μH
L314	PU48530-101K	COIL	100μH
L316	PU59152-150J	COIL	15μH
L317	PU48530-101K	COIL	100μH
L401	PU59152-330J	COIL	33μH
L402	PU48530-101K	COIL	100μH
EQ301	PU60811-2	EQUALIZER	
LPF301	PU58022	LOW PASS FILTER	
BPF301	PU57072	BAND PASS FILTER	
or	PU57072-2	BAND PASS FILTER	
BPF302	PU60654	BAND PASS FILTER	
or	PU60654-2	BAND PASS FILTER	
CF301	PU57073	CERAMIC FILTER	
DL301	PU58971-3	2H DELAY LINE	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
⚠ X301	PU60653	CRYSTAL UNITS	
T301	PU49057	LC BLOCK	
T401	PU60655	COIL, SECAM DET	

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8. TERMINAL BOARD ASSEMBLY 〈06〉

PWBA	PB20416A-01	TERMINAL BOARD ASSEMBLY	
D2	1SS133	DIODE	
or	MA165	DIODE	
D3	1SS133	DIODE	
or	MA165	DIODE	
R1	QRD161J-750	RESISTOR	75Ω, 1/6W
R2	QRD161J-750	RESISTOR	75Ω, 1/6W
R3	QRD161J-750	RESISTOR	75Ω, 1/6W
R4	QRD161J-750	RESISTOR	75Ω, 1/6W
R5	QRD161J-750	RESISTOR	75Ω, 1/6W
R7	QRD161J-102	RESISTOR	1KΩ, 1/6W
R8	QRD161J-102	RESISTOR	1KΩ, 1/6W
R9	QRD161J-102	RESISTOR	1KΩ, 1/6W
R10	QRD161J-102	RESISTOR	1KΩ, 1/6W
R11	QVZ3518-105	V RESISTOR, V.LOCK	1MΩ
C1	QCBB1HJ-181	CAPACITOR	180PF, 50V
C2	QCBB1HJ-181	CAPACITOR	180PF, 50V
C3	QCBB1HJ-471	CAPACITOR	470PF, 50V
C4	QCBB1HJ-471	CAPACITOR	470PF, 50V
C5	QETA1AM-108	E CAPACITOR	1000μF, 10V
L1	PU59152-3R9J	COIL	3.9μH
L2	PU59152-3R9J	COIL	3.9μH
LC1	PU59885-102	N FILTER	
LC2	PU59885-102	N FILTER	
LC3	PU59885-102	N FILTER	
LC4	PU59885-102	N FILTER	
LC7	PU59885-102	N FILTER	
LC8	PU59885-102	N FILTER	
K1	PU60281-5	FERRITE BEADS	
SCW1	SDSF2608Z	SCREW, X3	
⚠ TB1	PQ20677-16	TERMINAL BOARD	
CN1	PU59513-5	CAP HOUSING	
CN14	PU58929-18	HOUSING	
CN15	PU58929-13	HOUSING	

9. IF BOARD ASSEMBLY 〈07〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB10047AV	IF BOARD ASSEMBLY	
	IC1	M51365SP	IC	
	Q1	2SC3313CTA	TRANSISTOR	
	Q2	2SC3354	TRANSISTOR	
	Q3	2SC1317(RS)	TRANSISTOR	
	Q4	2SC1740(RS)	TRANSISTOR	
	or	2SC536SPA(FG)	TRANSISTOR	
	or	2SC3311A(RS)	TRANSISTOR	
	Q5	2SC1740(RS)	TRANSISTOR	
	or	2SC3311A(RS)	TRANSISTOR	
	or	2SC536SPA(FG)	TRANSISTOR	
	Q6	2SA933S(RS)	TRANSISTOR	
	or	2SA1309AR, S	TRANSISTOR	
	Q7	2SC1740(RS)	TRANSISTOR	
	or	2SC3311A(RS)	TRANSISTOR	
	or	2SC536SPA(FG)	TRANSISTOR	
	Q10	2SC3354	TRANSISTOR	
	Q11	2SC1740(RS)	TRANSISTOR	
	or	2SC3199(G)JK	TRANSISTOR	
	or	2SC536SPA(FG)	TRANSISTOR	
	or	2SC3311A(RS)	TRANSISTOR	
	Q12	DTC144ES	TRANSISTOR	
	or	2SC3399	TRANSISTOR	
	or	UN4213	TRANSISTOR	
	Q13	DTC144ES	TRANSISTOR	
	or	2SC3399	TRANSISTOR	
	or	UN4213	TRANSISTOR	
	D1	MTZ10D	ZENER DIODE	
	D6	1SS133	DIODE	
	D7	1SS133	DIODE	
	D8	1SS133	DIODE	
	R4	NRD187J-332NBU	RESISTOR	3.3KΩ, 1/8W
	R5	NRD187J-151NBU	RESISTOR	150Ω, 1/8W
	R6	NRD187J-182NBU	RESISTOR	1.8KΩ, 1/8W
	R7	NRD187J-331NBU	RESISTOR	330Ω, 1/8W
	R8	NRD187J-681NBU	RESISTOR	680Ω, 1/8W
	R10	NRD187J-271NBU	RESISTOR	270Ω, 1/8W
	R11	NRD187J-101NBU	RESISTOR	100Ω, 1/8W
	R15	NRD187J-271NBU	RESISTOR	270Ω, 1/8W
	R17	NRD187J-562NBU	RESISTOR	5.6KΩ, 1/8W
	R18	NRD187J-332NBU	RESISTOR	3.3KΩ, 1/8W
	R19	NRD187J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R20	NRD187J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R21	QVZ3518-472	V RESISTOR, RF AGC	4.7KΩ
	or	QVZ3523-472	V RESISTOR	4.7KΩ
	R22	NRD187J-824NBU	RESISTOR	820KΩ, 1/8W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R24	NRD187J-821NBU	RESISTOR	820Ω, 1/8W
	R31	NRD187J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R32	NRD187J-102NBU	RESISTOR	1KΩ, 1/8W
	R33	NRD187J-223NBU	RESISTOR	22KΩ, 1/8W
	R34	NRD187J-470NBU	RESISTOR	47Ω, 1/8W
	R35	NRD187J-561NBU	RESISTOR	560Ω, 1/8W
	R36	NRD187J-561NBU	RESISTOR	560Ω, 1/8W
	R37	NRD187J-121NBU	RESISTOR	120Ω, 1/8W
	R38	NRD187J-182NBU	RESISTOR	1.8KΩ, 1/8W
	R39	NRD187J-272NBU	RESISTOR	2.7KΩ, 1/8W
	R40	QVZ3518-103	V RESISTOR, COLOR LEVEL	10KΩ
	or	QVZ3523-103	V RESISTOR	10KΩ
	R41	NRD187J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R45	NRD187J-471NBU	RESISTOR	470Ω, 1/8W
	R46	NRD187J-104NBU	RESISTOR	100KΩ, 1/8W
	R47	NRD187J-153NBU	RESISTOR	15KΩ, 1/8W
	R48	NRD187J-392NBU	RESISTOR	3.9KΩ, 1/8W
	R49	NRD187J-103NBU	RESISTOR	10KΩ, 1/8W
	R50	NRD187J-471NBU	RESISTOR	470Ω, 1/8W
	R51	NRD187J-223NBU	RESISTOR	22KΩ, 1/8W
	R52	NRD187J-223NBU	RESISTOR	22KΩ, 1/8W
	R53	NRD187J-103NBU	RESISTOR	10KΩ, 1/8W
	R54	NRD187J-682NBU	RESISTOR	6.8KΩ, 1/8W
	R57	NRD187J-153NBU	RESISTOR	15KΩ, 1/8W
	R62	NRD187J-392NBU	RESISTOR	3.9KΩ, 1/8W
	R63	NRD187J-470NBU	RESISTOR	47Ω, 1/8W
	R64	NRD187J-182NBU	RESISTOR	1.8KΩ, 1/8W
	R65	NRD187J-221NBU	RESISTOR	220Ω, 1/8W
	R71	NRD187J-681NBU	RESISTOR	680Ω, 1/8W
	R72	NRD187J-470NBU	RESISTOR	47Ω, 1/8W
	R73	NRD187J-331NBU	RESISTOR	330Ω, 1/8W
	R82	NRD187J-680NBU	RESISTOR	68Ω, 1/8W
	R83	NRD187J-331NBU	RESISTOR	330Ω, 1/8W
	R84	NRD187J-123NBU	RESISTOR	12KΩ, 1/8W
	R85	NRD187J-123NBU	RESISTOR	12KΩ, 1/8W
	R86	NRD187J-331NBU	RESISTOR	330Ω, 1/8W
	R101	NRD187J-182NBU	RESISTOR	1.8KΩ, 1/8W
	R102	NRD187J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R104	QRD161J-393	RESISTOR	39KΩ, 1/6W
	C2	NCT02CH-5R6NBR	CAPACITOR	5.6PF
	C3	QCT25HH-101	CAPACITOR	100PF
	C4	NCT02CH-3R9NBR	CAPACITOR	3.9PF
	C5	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C6	NCX71CM-222NBR	CAPACITOR	0.0022μF, 16V
	C7	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C8	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C10	QETC1CM-336	E CAPACITOR	33μF, 16V
	C11	NCY71CM-103NBR	CAPACITOR	0.01μF, 16V
	C13	NCX71CM-222NBR	CAPACITOR	0.0022μF, 16V
	C14	PU57601-474ME	E CAPACITOR	0.47μF
	C15	QETC1CM-336	E CAPACITOR	33μF, 16V
	C16	NCX71CM-222NBR	CAPACITOR	0.0022μF, 16V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C17	NCF71EZ-223NBR	CAPACITOR	0.022μF, 25V
	C19	NCY71CM-103NBR	CAPACITOR	0.01μF, 16V
	C20	NCY71CM-103NBR	CAPACITOR	0.01μF, 16V
	C21	NCB71HK-101NBR	CAPACITOR	100PF, 50V
	C24	QETC1HM-105	E CAPACITOR	1μF, 50V
	C25	NCX71CM-222NBR	CAPACITOR	0.0022μF, 16V
	C26	QFN31HK-222	M CAPACITOR	0.0022μF, 50V
	C27	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C29	NCS71HJ-560NBR	CAPACITOR	56PF, 50V
	C31	QETC1HM-335	E CAPACITOR	3.3μF, 50V
	C32	NCF71EZ-223NBR	CAPACITOR	0.022μF, 25V
	C33	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C41	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C43	NCX71CM-222NBR	CAPACITOR	0.0022μF, 16V
	C44	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C45	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C46	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C50	QETC1CM-336	E CAPACITOR	33μF, 16V
	C56	QETC1CM-336	E CAPACITOR	33μF, 16V
	C57	QEN41CM-336	NP E CAPACITOR	33μF, 16V
	or	QEN61CM-336	NP E CAPACITOR	33μF, 16V
	C58	NCS71HJ-100NBR	CAPACITOR	10PF, 50V
	C60	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C63	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C64	NCB71HK-391NBR	CAPACITOR	390PF, 50V
	L1	PU60025-1R5	COIL	1.5μH
	L2	PU60025-R82	COIL	0.82μH
	L3	PU60025-1R8	COIL	1.8μH
	L4	PU59152-8R2J	COIL	8.2μH
	L5	PU59152-220J	COIL	22μH
	L6	PU59152-6R8K	COIL	6.8μH
	L7	PU59152-R22K	COIL	0.22μH
	L9	PU59152-6R8K	COIL	6.8μH
	CF1	PU49295-2	N FILTER	
	CF3	PU32990-2	CERAMIC FILTER	
	CF4	PU49295	CERAMIC FILTER	
	CF5	PU32990-4	CERAMIC FILTER	
	SAW1	PU60804	SAW FILTER	
	SAW2	PU60765	SAW FILTER	
	T1	PU60042-2	COIL	
	T2	PU60497	IF. TRANSFORMER	
	T4	PU59488	COIL	
	T5	PU60046	IF. TRANSFORMER	
	T8	PU60259	COIL	
	JP1	PU59935-16	TERMINAL	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
**	**	**	**	**

10. TUNER CTL BOARD ASSEMBLY 〈08〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB20383A	TUNER CONTROL BOARD ASSY	
⚠	RF1	PU60817-1-1	RF CONVERTER/MIX BOOSTER	
⚠	TNR1	PERF0021	UHF/VHF TUNER	
	IC1	UPD75006CU-041	IC	
	or	UPD75P008CU6041	IC	
	IC2	MSM16811RS	IC	
	Q1	DTC144ES	TRANSISTOR	
	Q2	DTC144ES	TRANSISTOR	
	Q3	2SB1010(QR)	TRANSISTOR	
	Q4	2SD1856	TRANSISTOR	
	Q5	2SC3313CTA	TRANSISTOR	
	Q6	2SC3313CTA	TRANSISTOR	
	Q7	2SC3313CTA	TRANSISTOR	
	Q8	2SC1740S(S)	TRANSISTOR	
	Q9	DTC144ES	TRANSISTOR	
	Q10	2SK381(C)	FE TRANSISTOR	
	Q11	2SK381(C)	FE TRANSISTOR	
	Q12	DTC144ES	TRANSISTOR	
	D1	E-452-2-T2	DIODE	
	D2	HZT33-02	ZENER DIODE	
	D3	1SS133	DIODE	
	D4	MTZ6.8B	ZENER DIODE	
	R1	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R2	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R3	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R4	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R5	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R6	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R7	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R8	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R9	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R10	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R11	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R12	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R13	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R14	QRD161J-105	RESISTOR	1MΩ, 1/6W
	R15	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R16	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R17	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R18	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R19	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R20	QRD161J-331	RESISTOR	330Ω, 1/6W
	R25	QRD162J-272	RESISTOR	2.7KΩ, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R26	QRD161J-151	RESISTOR	150Ω, 1/6W
	R27	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R28	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R29	QRD161J-331	RESISTOR	330Ω, 1/6W
	R30	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R31	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R32	QRD161J-331	RESISTOR	330Ω, 1/6W
	R33	QRD161J-560	RESISTOR	56Ω, 1/6W
	R34	QRD161J-123	RESISTOR	12KΩ, 1/6W
	R35	QRD161J-364	RESISTOR	360KΩ, 1/6W
	R36	QRD161J-182	RESISTOR	1.8KΩ, 1/6W
	R37	QRD161J-682	RESISTOR	6.8KΩ, 1/6W
	R38	QRD161J-105	RESISTOR	1MΩ, 1/6W
	RA1	QRB077J-104	RESISTOR ARRAY	
	or	QRB079J-104	NETWORK RESISTOR	
	C1	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C5	QCF11HP-473	CAPACITOR	0.047μF, 50V
	C6	QETC1AM-107	E CAPACITOR	100μF, 10V
	C10	QETC1CM-107	E CAPACITOR	100μF, 16V
	C11	QCBB1HJ-471	CAPACITOR	470PF, 50V
	C12	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C13	QETC1HM-106	E CAPACITOR	10μF, 50V
	C14	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C15	QETC1HM-225	E CAPACITOR	2.2μF, 50V
	C17	QETC1AM-107	E CAPACITOR	100μF, 10V
	C18	QETC1AM-107	E CAPACITOR	100μF, 10V
	C19	QETC1CM-106	E CAPACITOR	10μF, 16V
	C20	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C21	QETC1CM-476	E CAPACITOR	47μF, 16V
	C28	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C29	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C30	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C32	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C33	QCXB1CM-222	CAPACITOR	0.0022μF, 16V
	C34	QCBB1HJ-910	CAPACITOR	91PF, 50V
	L1	PU59152-R22J	COIL	0.22μH
	or	PU59152-R22K	COIL	0.22μH
	L3	PU59152-100J	COIL	10μH
	L4	PU59152-1R0K	COIL	1.0μH
	L5	PU59152-1R0K	COIL	1.0μH
	L7	PU59152-2R7K	COIL	2.7μH
	L9	PU59152-6R8J	COIL	6.8μH
	L10	PU59152-5R6J	COIL	5.6μH
⚠	CF1	PU59545	RESONATOR	
	HD1	PU36378	HOLDER	
	WR1	PW30401-BB22S	COAXIAL CORD	
	or	PW30401-BB22T	COAXIAL CORD	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	CN1	PU58844-7	CAP HOUSING
	CN2	PU58844-9	CAP HOUSING
	CN4	PU58844-5	CAP HOUSING
	CN5	PU58844-6	CAP HOUSING
	CN6	PU59374	JACK
⚠	CP1	ICP-N10	CIRCUIT PROTECTOR

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11. AUDIO BOARD ASSEMBLY 〈09〉

PWBA	PB20292N	AUDIO BOARD ASSEMBLY
IC1	AN3380NK	IC
IC2	TA7361AP	IC
IC3	PB20167A-01	FMA MODULE BOARD ASSY
IC101	UPC78N05	IC
Q1	2SC1740S(RS)	TRANSISTOR
Q2	2SC3311(RS)	TRANSISTOR
Q3	DTC114ES	TRANSISTOR
Q4	2SC1740S(RS)	TRANSISTOR
Q5	DTC114ES	TRANSISTOR
Q6	DTC114ES	TRANSISTOR
Q7	DTC114ES	TRANSISTOR
Q8	DTA114ES	TRANSISTOR
Q9	DTA114ES	TRANSISTOR
Q10	2SC1740S(RS)	TRANSISTOR
Q11	2SC1740S(RS)	TRANSISTOR
Q12	DTC143TS	TRANSISTOR
Q13	DTC143TS	TRANSISTOR
Q14	2SC1740S(RS)	TRANSISTOR
Q15	2SC1740S(QR)	TRANSISTOR
Q16	2SC3311(RS)	TRANSISTOR
Q17	DTA114ES	TRANSISTOR
Q18	DTC114ES	TRANSISTOR
Q20	DTA114ES	TRANSISTOR
Q23	DTA143TS	TRANSISTOR
Q101	2SD1764	TRANSISTOR
Q102	2SA854S(QR)	TRANSISTOR
Q103	2SA854S(QR)	TRANSISTOR
D1	1SS133	DIODE
or	MA165	DIODE
D3	1SS133	DIODE
or	MA165	DIODE
D5	1SS133	DIODE
or	MA165	DIODE
D6	1SS133	DIODE
or	MA165	DIODE
D7	1SS133	DIODE

#△ REF No.	PART No.	PART NAME, DESCRIPTION
	or MA165	DIODE
D8	1SS133	DIODE
	or MA165	DIODE
D9	HZ2BLL	ZENER DIODE
D12	1SS133	DIODE
	or MA165	DIODE
D16	1SS133	DIODE
	or MA165	DIODE
D17	1SS133	DIODE
	or MA165	DIODE
D20	HZ2C3	ZENER DIODE
	or UZ2.7BSA	ZENER DIODE
D101	HZ12A2	ZENER DIODE
D102	1SS133	DIODE
	or MA165	DIODE
R3	QRD161J-102	RESISTOR 1KΩ, 1/6W
R4	QRD161J-682	RESISTOR 6.8KΩ, 1/6W
R5	QRD161J-271	RESISTOR 270Ω, 1/6W
R6	QRD161J-152	RESISTOR 1.5KΩ, 1/6W
R7	QRD161J-222	RESISTOR 2.2KΩ, 1/6W
R8	QRD161J-100	RESISTOR 10Ω, 1/6W
R9	QVZ3518-473	V RESISTOR, BIAS ADJ 47KΩ
R10	QRD161J-333	RESISTOR 33KΩ, 1/6W
R11	QRD161J-473	RESISTOR 47KΩ, 1/6W
R12	QRD161J-101	RESISTOR 100Ω, 1/6W
R13	QRD161J-273	RESISTOR 27KΩ, 1/6W
R14	QRD161J-3R9	RESISTOR 3.9Ω, 1/6W
R15	QRD161J-103	RESISTOR 10KΩ, 1/6W
R16	QRD161J-103	RESISTOR 10KΩ, 1/6W
R17	QRD161J-102	RESISTOR 1KΩ, 1/6W
R20	QRD161J-183	RESISTOR 18KΩ, 1/6W
R21	QRD161J-270	RESISTOR 27Ω, 1/6W
R22	QRD161J-470	RESISTOR 47Ω, 1/6W
R23	QRD161J-303	RESISTOR 30KΩ, 1/6W
R25	QRD161J-103	RESISTOR 10KΩ, 1/6W
R26	QRD161J-274	RESISTOR 270KΩ, 1/6W
R27	QRD161J-471	RESISTOR 470Ω, 1/6W
R28	QVZ3518-102	V RESISTOR, PB ADJ 1KΩ
R29	QRD161J-102	RESISTOR 1KΩ, 1/6W
R31	QRD161J-151	RESISTOR 150Ω, 1/6W
R32	QRD161J-102	RESISTOR 1KΩ, 1/6W
R33	QRD161J-102	RESISTOR 1KΩ, 1/6W
R34	QRD161J-151	RESISTOR 150Ω, 1/6W
R40	QVZ3518-222	V RESISTOR, EE LEVEL (L) 2.2KΩ
R41	QVZ3518-222	V RESISTOR, EE LEVEL (R) 2.2KΩ
R43	QRD161J-101	RESISTOR 100Ω, 1/6W
R44	QRD161J-101	RESISTOR 100Ω, 1/6W
R45	QRD161J-392	RESISTOR 3.9KΩ, 1/6W
R46	QRD161J-332	RESISTOR 3.3KΩ, 1/6W
R47	QRD161J-123	RESISTOR 12KΩ, 1/6W
R48	QRD161J-223	RESISTOR 22KΩ, 1/6W
R49	QRD161J-274	RESISTOR 270KΩ, 1/6W
R50	QRD161J-222	RESISTOR 2.2KΩ, 1/6W

#△ REF No.	PART No.	PART NAME, DESCRIPTION
R51	QRD161J-222	RESISTOR 2.2KΩ, 1/6W
R52	QRD161J-103	RESISTOR 10KΩ, 1/6W
R53	QRD161J-333	RESISTOR 33KΩ, 1/6W
R54	QRD161J-183	RESISTOR 18KΩ, 1/6W
R55	QRD161J-332	RESISTOR 3.3KΩ, 1/6W
R56	QRD161J-272	RESISTOR 2.7KΩ, 1/6W
R57	QRD161J-181	RESISTOR 180Ω, 1/6W
R58	QRD161J-333	RESISTOR 33KΩ, 1/6W
R59	QRD161J-333	RESISTOR 33KΩ, 1/6W
R60	QRD161J-333	RESISTOR 33KΩ, 1/6W
R62	QRD161J-333	RESISTOR 33KΩ, 1/6W
R63	QRD161J-102	RESISTOR 1KΩ, 1/6W
R64	QRD161J-331	RESISTOR 330Ω, 1/6W
R65	QRD161J-223	RESISTOR 22KΩ, 1/6W
R66	QRD161J-6R8	RESISTOR 6.8Ω, 1/6W
R67	QRD161J-333	RESISTOR 33KΩ, 1/6W
R68	QRD161J-333	RESISTOR 33KΩ, 1/6W
R70	QRD161J-273	RESISTOR 27KΩ, 1/6W
R72	QRD161J-392	RESISTOR 3.9KΩ, 1/6W
R73	QVZ3518-332	V RESISTOR, IND(L) 3.3KΩ
R74	QVZ3518-332	V RESISTOR, IND(R) 3.3KΩ
R76	QRD161J-151	RESISTOR 150Ω, 1/6W
R80	QVZ3518-331	V RESISTOR, FM REC ADJ 330Ω
R81	QRD161J-103	RESISTOR 10KΩ, 1/6W
R82	QRD161J-153	RESISTOR 15KΩ, 1/6W
R83	QRD161J-151	RESISTOR 150Ω, 1/6W
R84	QRD161J-151	RESISTOR 150Ω, 1/6W
R85	QRD161J-222	RESISTOR 2.2KΩ, 1/6W
R86	QRD161J-103	RESISTOR 10KΩ, 1/6W
R87	QRD161J-102	RESISTOR 1KΩ, 1/6W
R88	QRD161J-102	RESISTOR 1KΩ, 1/6W
R89	QRD161J-820	RESISTOR 82Ω, 1/6W
R91	QRD161J-103	RESISTOR 10KΩ, 1/6W
R95	QRD161J-271	RESISTOR 270Ω, 1/6W
R101	QRD161J-182	RESISTOR 1.8KΩ, 1/6W
R103	QRD161J-103	RESISTOR 10KΩ, 1/6W
R104	QRD161J-222	RESISTOR 2.2KΩ, 1/6W
R105	QRD161J-103	RESISTOR 10KΩ, 1/6W
R106	QRD161J-681	RESISTOR 680Ω, 1/6W
R107	QRD161J-152	RESISTOR 1.5KΩ, 1/6W
R108	QRD161J-391	RESISTOR 390Ω, 1/6W
R109	QRD161J-332	RESISTOR 3.3KΩ, 1/6W
R110	QRD161J-153	RESISTOR 15KΩ, 1/6W
C1	QETC1CM-106	E CAPACITOR 10μF, 16V
C2	QETC1AM-476	E CAPACITOR 47μF, 10V
C3	QEP61CM-106	NP E CAPACITOR 10μF, 16V
C4	QETC1CM-106	E CAPACITOR 10μF, 16V
C5	QETC1CM-226	E CAPACITOR 22μF, 16V
C6	QETC1AM-336	E CAPACITOR 33μF, 10V
C7	QETC1AM-476	E CAPACITOR 47μF, 10V
C8	QCBB1HK-102	CAPACITOR 0.001μF, 50V
C9	QCBB1HK-101	CAPACITOR 100PF, 50V
C10	QETC1AM-336	E CAPACITOR 33μF, 10V
C11	QETC1AM-107	E CAPACITOR 100μF, 10V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C12	QETC1CM-226	E CAPACITOR	22μF, 16V
C13	QETB1CM-106	E CAPACITOR	10μF, 16V
C14	QEP61CM-106	NP E CAPACITOR	10μF, 16V
C15	QETB1AM-476	E CAPACITOR	47μF, 10V
C16	QETC1CM-106	E CAPACITOR	10μF, 16V
C17	QCBB1HJ-331	CAPACITOR	330PF, 50V
C18	QFV71HJ-223	TF CAPACITOR	0.022μF, 50V
or	QFN31HJ-223	M CAPACITOR	0.022μF, 50V
C19	QCC11EJ-222	CAPACITOR	0.0022μF, 25V
C20	QCC11EJ-102	CAPACITOR	0.001μF, 25V
C21	QEK61EM-475	E CAPACITOR	4.7μF, 25V
C24	QCBB1HJ-561	CAPACITOR	560PF, 50V
C25	QETC1HM-225	E CAPACITOR	2.2μF, 50V
C26	QETC1AM-336	E CAPACITOR	33μF, 10V
C27	QETC0JM-476	E CAPACITOR	47μF, 6.3V
C28	QFN31HJ-104	M CAPACITOR	0.1μF, 50V
or	QFV71HJ-104	TF CAPACITOR	0.1μF, 50V
C29	QFV71HJ-473	TF CAPACITOR	0.047μF, 50V
C30	QETC1HM-105	E CAPACITOR	1μF, 50V
C31	QETC1CM-106	E CAPACITOR	10μF, 16V
C32	QFN31HJ-123	M CAPACITOR	0.012μF, 50V
C33	QFV71HJ-274	TF CAPACITOR	0.27μF, 50V
C34	QEB51CM-226	E CAPACITOR	22μF, 16V
C35	QEB51HM-105	E CAPACITOR	1μF, 50V
C36	QETB1CM-106	E CAPACITOR	10μF, 16V
C37	QETC1AM-336	E CAPACITOR	33μF, 10V
C38	QETC1CM-476	E CAPACITOR	47μF, 16V
C39	QETC1AM-336	E CAPACITOR	33μF, 10V
C40	QETC1CM-106	E CAPACITOR	10μF, 16V
C41	QETC1CM-476	E CAPACITOR	47μF, 16V
C42	QETC1HM-225	E CAPACITOR	2.2μF, 50V
C43	QETC1CM-106	E CAPACITOR	10μF, 16V
C44	QETC1HM-225	E CAPACITOR	2.2μF, 50V
C45	QEN61HM-225	NP E CAPACITOR	2.2μF, 50V
C46	QEN61HM-225	NP E CAPACITOR	2.2μF, 50V
C47	QETC1HM-225	E CAPACITOR	2.2μF, 50V
C49	QCF31HP-223	CAPACITOR	0.022μF, 50V
C50	QFV71HJ-104	TF CAPACITOR	0.1μF, 50V
or	QFN31HJ-104	M CAPACITOR	0.1μF, 50V
C51	QFV71HJ-104	TF CAPACITOR	0.1μF, 50V
or	QFN31HJ-104	M CAPACITOR	0.1μF, 50V
C52	QFV81HJ-224	TF CAPACITOR	0.22μF, 50V
C53	QCF31HP-223	CAPACITOR	0.022μF, 50V
C54	QEK60JM-107	E CAPACITOR	100μF, 6.3V
C55	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C56	QFV81HJ-224	TF CAPACITOR	0.22μF, 50V
C57	QCSB1HJ-330	CAPACITOR	33PF, 50V
C58	QCBB1HJ-331	CAPACITOR	330PF, 50V
C59	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
C60	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C61	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C62	QCVB1CN-103	CAPACITOR	0.01μF, 16V
C63	QCC11EJ-272	CAPACITOR	0.0027μF, 25V
C66	QETC1CM-106	E CAPACITOR	10μF, 16V
C67	QETC1CM-106	E CAPACITOR	10μF, 16V
C68	QETC1HM-225	E CAPACITOR	2.2μF, 50V
C69	QETC1HM-225	E CAPACITOR	2.2μF, 50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C70	QCBC1HJ-391	CAPACITOR	390PF, 50V
C71	QCBB1HJ-391	CAPACITOR	390PF, 50V
C72	QCBB1HK-561	CAPACITOR	560PF, 50V
C73	QCBB1HK-561	CAPACITOR	560PF, 50V
C74	QCC11EJ-332	CAPACITOR	0.0033μF, 25V
C75	QCC11EJ-102	CAPACITOR	0.001μF, 25V
C76	QFV71HJ-333	TF CAPACITOR	0.033μF, 50V
or	QFN31HJ-333	M CAPACITOR	0.033μF, 50V
C77	QETC1CM-106	E CAPACITOR	10μF, 16V
C79	QCC11EJ-273	CAPACITOR	0.027μF, 25V
C101	QEK61EM-336	E CAPACITOR	33μF, 25V
C102	QCBB1HK-102	CAPACITOR	0.001μF, 50V
C103	QEK61HM-105	E CAPACITOR	1μF, 50V
C104	QETC1CM-106	E CAPACITOR	10μF, 16V
C105	QFV81HJ-153	TF CAPACITOR	0.015μF, 50V
C106	QCBB1HJ-681	CAPACITOR	680PF, 50V
C107	QCBB1HJ-391	CAPACITOR	390PF, 50V
L1	PU54223-101J	COIL	100μH
L3	PU58308-392J	COIL	3.9mH
L4	PU54223-221J	COIL	220μH
L5	PU54223-101J	COIL	100μH
BPF1	PU60610	BPF	
BPF2	PU60611	BPF	
⚠ T1	PU60320	OSC TRANSFORMER	
⚠ T2	PU60321	OSC TRANSFORMER	
HN1	PU58018-1-2	PWB HINGE, X2	
⚠ HS1	PU60185	HEAT SINK, FOR Q101	
HS2	PU60261	HEAT SINK, FOR IC101	
SCW1	DPSP3008Z	SCREW, FOR Q101	
SLD1	PU59960	P/R AMP SHIELD1	
SLD2	PU59961	P/R AMP SHIELD2	
SLD3	PQ43345-1-1	SHIELD PLATE	
TP31	PU55774	TEST PIN, X7, (TP31-34, 53, 54, GND)	
CN1	PU58844-3Y	CAP HOUSING	
CN2	PU59555-6	CAP HOUSING	
CN3	PU58844-2	CAP HOUSING	
CN4	PU59555-5	CAP HOUSING	
CN5	PU58844-4	CAP HOUSING	
CN6	PU58844-2	CAP HOUSING	
CN7	PU58844-4	CAP HOUSING	
CN8	PU58844-3R	CAP HOUSING	
CN8	PU58844-3	CAP HOUSING	
CN9	PU58844-8	CAP HOUSING	
CN10	PU58844-5	CAP HOUSING	
CN11	PU58844-3	CAP HOUSING	
CN12	PU59555-6	CAP HOUSING	
CN14	PU58844-2Y	CAP HOUSING	
CN16	PU58844-2	CAP HOUSING	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
⚠	CP1	ICP-F20	CIRCUIT PROTECTOR	

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12. AUDIO/VIDEO IN OUT BOARD ASSY ⟨10⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB20429A-01	AV IN/OUT BOARD ASSEMBLY	
	SLD1	PQ43207	SHIELD COVER	
	CN1	PU58844-8	CAP HOUSING	
	CN2	PU58844-3	CAP HOUSING	
	CN3	PU59555-4	CAP HOUSING	
	CN4	PU58844-4	CAP HOUSING	
	CN16	PU58929-16	HOUSING	
	CN17	PU58929-15	HOUSING	
	CN301	PU58844-5	CAP HOUSING	
	CN302	PU58844-4	CAP HOUSING	
	CN303	PU58844-6	CAP HOUSING	
	CN304	PU58844-6	CAP HOUSING	
	CN305	PU58844-7	CAP HOUSING	
	CN306	PU58844-6	CAP HOUSING	
	CN307	PU58844-4	CAP HOUSING	
	CN308	PU59555-9	CAP HOUSING	
	CN309	PU58844-6	CAP HOUSING	
	CN310	PU59555-5	CAP HOUSING	
	CN311	PU59555-3	CAP HOUSING	

— AUDIO SECTION —

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC1	TC4052BP	IC	
		or MC14052BCP	IC	
	IC2	M5218P	IC	
	IC3	M5218P	IC	
	Q1	2SD1450S, T	TRANSISTOR	
	Q2	2SC1740S(QRS)	TRANSISTOR	
		or 2SC3199(GB)-TJK	TRANSISTOR	
	Q3	2SC1740S(QRS)	TRANSISTOR	
		or 2SC3199(GB)-TJK	TRANSISTOR	
	R1	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R2	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R3	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R4	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R5	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R6	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R7	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R8	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R9	QRD161J-224	RESISTOR	220KΩ, 1/6W
	R10	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R11	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R12	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R13	QRD161J-122	RESISTOR	1.2KΩ, 1/6W
	R14	QRD161J-101	RESISTOR	100Ω, 1/6W
	R15	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R16	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R17	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R18	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R19	QRD161J-0R0	RESISTOR	0Ω, 1/6W
	R20	QRD161J-561	RESISTOR	560Ω, 1/6W
	R21	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R22	QRD161J-0R0	RESISTOR	0Ω, 1/6W
	R23	QRD161J-682	RESISTOR	6.8KΩ, 1/6W
	R24	QRD161J-302	RESISTOR	3KΩ, 1/6W
	R25	QRD161J-302	RESISTOR	3KΩ, 1/6W
	R26	QRD161J-0R0	RESISTOR	0Ω, 1/6W
	R27	QRD161J-682	RESISTOR	6.8KΩ, 1/6W
	R28	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R29	QRD161J-221	RESISTOR	220Ω, 1/6W
	R30	QRD161J-823	RESISTOR	82KΩ, 1/6W
	R31	QRD161J-224	RESISTOR	220KΩ, 1/6W
	R32	QRD161J-103	RESISTOR	10KΩ, 1/6W
	RA1	QRB045J-223F	RESISTOR ARRAY	
		or QRB045J-223C	RESISTOR ARRAY	
	RA2	QRB055J-104F	RESISTOR ARRAY	
		or QRB055J-104C	RESISTOR ARRAY	
	RA3	QRB065J-104F	RESISTOR ARRAY	
		or QRB065J-104C	RESISTOR ARRAY	
	C1	QEK61CM-106	E CAPACITOR	10μF, 16V
	C2	QEK61CM-106	E CAPACITOR	10μF, 16V
	C3	QEP61CM-106	NP E CAPACITOR	10μF, 16V
	C4	QEK61CM-106	E CAPACITOR	10μF, 16V
	C5	QEK61CM-106	E CAPACITOR	10μF, 16V
	C6	QEK61CM-106	E CAPACITOR	10μF, 16V
	C7	QEK61CM-106	E CAPACITOR	10μF, 16V
	C8	QEK61CM-106	E CAPACITOR	10μF, 16V
	C9	QEP61CM-106	NP E CAPACITOR	10μF, 16V
	C10	QEK61CM-106	E CAPACITOR	10μF, 16V
	C11	QEK61CM-106	E CAPACITOR	10μF, 16V
	C12	QEK60JM-107	E CAPACITOR	100μF, 6.3V
	C13	QEK61CM-476	E CAPACITOR	47μF, 16V
	C14	QEK61HM-105	E CAPACITOR	1μF, 50V
	C15	QEK61CM-476	E CAPACITOR	47μF, 16V
	C18	QEP61HM-335	E CAPACITOR	3.3μF, 50V
	C20	QEP61HM-335	E CAPACITOR	3.3μF, 50V
	C22	QEK61HM-105	E CAPACITOR	1μF, 50V
	C23	QEK61HM-105	E CAPACITOR	1μF, 50V
	SLD1	PQ42994	SHIELD PLATE	
	SLD2	PQ42995	SHIELD CASE	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION

— VIDEO SECTION —

IC301	NJM2234M	IC
IC302	NJM2234M	IC
IC303	NJM2243M	IC
IC304	NJM2234M	IC
IC305	MC74HC4066F	SOP IC
IC306	MM1031XM	IC
Q301	DTA124EK	TRANSISTOR
Q302	2SA1037K(RS)	TRANSISTOR
Q303	2SA1037K(RS)	TRANSISTOR
Q304	2SA1037K(RS)	TRANSISTOR
Q305	2SA1037K(RS)	TRANSISTOR
Q306	2SA1037K(RS)	TRANSISTOR
Q307	2SC2412K(RS)	TRANSISTOR
Q308	2SC2412K(RS)	TRANSISTOR
Q309	2SC2412K(RS)	TRANSISTOR
Q310	2SC2412K(RS)	TRANSISTOR
Q311	2SC2412K(RS)	TRANSISTOR
Q312	2SC2412K(RS)	TRANSISTOR
Q313	2SC2412K(RS)	TRANSISTOR
Q314	2SA1037K(RS)	TRANSISTOR
Q316	2SC2412K(RS)	TRANSISTOR
Q317	2SC2412K(RS)	TRANSISTOR
Q318	DTC144EK	TRANSISTOR
Q319	2SA1037K(RS)	TRANSISTOR
Q320	2SA1037K(RS)	TRANSISTOR
Q321	2SA1036K(R)	TRANSISTOR
D301	DAN202K	DIODE
D302	DAN202K	DIODE
D303	DAP202K	DIODE
D304	DAN202K	DIODE
D305	DAN202K	DIODE
D306	DAN202K	DIODE
D307	DAN202K	DIODE
D308	DAN202K	DIODE
D309	DAN202K	DIODE
D310	DAN202K	DIODE
D311	DAP202K	DIODE
D312	DAN202K	DIODE
D313	DAP202K	DIODE
D314	DAN202K	DIODE
D315	DAN202K	DIODE
D316	DAN202K	DIODE
D317	DAN202K	DIODE
D318	DAN202K	DIODE
D319	DAN202K	DIODE
D320	DAP202K	DIODE
D321	DAP202K	DIODE
D322	DAN202K	DIODE
D323	DAN202K	DIODE
D324	DAN202K	DIODE
D325	DAN202K	DIODE
D326	DAP202K	DIODE
D327	DAP202K	DIODE
R301	QRSA08J-101YN	RESISTOR 100Ω, 1/10W
R302	QRSA08J-560YN	RESISTOR 56Ω, 1/10W
R303	QRSA08J-560YN	RESISTOR 56Ω, 1/10W
R304	QRSA08J-472YN	RESISTOR 4.7KΩ, 1/10W
R305	QRSA08J-472YN	RESISTOR 4.7KΩ, 1/10W
R306	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W
R307	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W
R308	QRD127J-391	RESISTOR 390Ω, 1/2W
R309	QRSA08J-750YN	RESISTOR 75Ω, 1/10W
R310	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W
R311	QRD181J-561	RESISTOR 560Ω, 1/8W
R312	QRSA08J-750YN	RESISTOR 75Ω, 1/10W
R313	QRSA08J-152YN	RESISTOR 1.5KΩ, 1/10W
R314	QRSA08J-472YN	RESISTOR 4.7KΩ, 1/10W
R315	QRSA08J-123YN	RESISTOR 12KΩ, 1/10W
R316	QRSA08J-332YN	RESISTOR 3.3KΩ, 1/10W
R317	QRSA08J-473YN	RESISTOR 47KΩ, 1/10W
R318	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R320	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R321	QRSA08J-223YN	RESISTOR 22KΩ, 1/10W
R322	QRSA08J-223YN	RESISTOR 22KΩ, 1/10W
R323	QRSA08J-222YN	RESISTOR 2.2KΩ, 1/10W
R324	QRSA08J-222YN	RESISTOR 2.2KΩ, 1/10W
R325	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W
R326	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W
R327	QRSA08J-223YN	RESISTOR 22KΩ, 1/10W
R328	QRSA08J-392YN	RESISTOR 3.9KΩ, 1/10W
R329	QRSA08J-272YN	RESISTOR 2.7KΩ, 1/10W
R330	QRSA08J-331YN	RESISTOR 330Ω, 1/10W
R331	QRSA08J-101YN	RESISTOR 100Ω, 1/10W
R332	QRSA08J-272YN	RESISTOR 2.7KΩ, 1/10W
R334	QRSA08J-182YN	RESISTOR 1.8KΩ, 1/10W
R335	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R336	QRSA08J-223YN	RESISTOR 22KΩ, 1/10W
R337	QRSA08J-272YN	RESISTOR 2.7KΩ, 1/10W
R338	QRSA08J-223YN	RESISTOR 22KΩ, 1/10W
R339	QRSA08J-223YN	RESISTOR 22KΩ, 1/10W
R340	QRSA08J-683YN	RESISTOR 68KΩ, 1/10W
R341	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R342	QRSA08J-223YN	RESISTOR 22KΩ, 1/10W
R343	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R344	QRSA08J-562YN	RESISTOR 5.6KΩ, 1/10W
R345	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R346	QRSA08J-472YN	RESISTOR 4.7KΩ, 1/10W
R347	QRSA08J-223YN	RESISTOR 22KΩ, 1/10W
R348	QRSA08J-223YN	RESISTOR 22KΩ, 1/10W
R349	QRSA08J-472YN	RESISTOR 4.7KΩ, 1/10W
R350	QRSA08J-393YN	RESISTOR 39KΩ, 1/10W
R351	QRSA08J-472YN	RESISTOR 4.7KΩ, 1/10W
R352	QRSA08J-0R0Y	RESISTOR 0Ω, 1/10W
R353	QRSA08J-0R0Y	RESISTOR 0Ω, 1/10W
R354	QRSA08J-680YN	RESISTOR 68Ω, 1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R355	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R356	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R357	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R358	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R359	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	C301	QEK61CM-106	E CAPACITOR	10μF, 16V
	C302	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C303	QEK61CM-106	E CAPACITOR	10μF, 16V
	C304	QCSA1HJ-330	CAPACITOR	33PF, 50V
	C305	QEK61CM-106	E CAPACITOR	10μF, 16V
	C306	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C308	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C309	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C310	QEK60JM-476	E CAPACITOR	47μF, 6.3V
	C311	QCSA1HJ-390	CAPACITOR	39PF, 50V
	C312	QEP61CM-106	NP E CAPACITOR	10μF, 16V
	C313	QEK61CM-106	E CAPACITOR	10μF, 16V
	C314	QEK61CM-226	E CAPACITOR	22μF, 16V
	C315	QETB1AM-477	E CAPACITOR	470μF, 10V
	C316	QEK61CM-476	E CAPACITOR	47μF, 16V
	C317	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C318	QEP61CM-106	NP E CAPACITOR	10μF, 16V
	C319	QEK61CM-226	E CAPACITOR	22μF, 16V
	C320	QEK61AM-226	E CAPACITOR	22μF, 10V
	C322	QEK60JM-476	E CAPACITOR	47μF, 6.3V
	C323	QEK61CM-476	E CAPACITOR	47μF, 16V
	C324	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C325	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C326	QEK61CM-476	E CAPACITOR	47μF, 16V
	C327	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C328	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C329	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C330	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C331	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C332	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C333	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C335	QCSA1HJ-561	CAPACITOR	560PF, 50V
	C336	QCSA1HJ-101	CAPACITOR	100PF, 50V
	C337	QCSA1HJ-560	CAPACITOR	56PF, 50V
	C338	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C339	QEK61CM-106	E CAPACITOR	10μF, 16V
	C340	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C341	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C342	QCSA1HJ-560	CAPACITOR	56PF, 50V
	C343	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C344	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C345	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C346	QEK61HM-105	E CAPACITOR	1μF, 50V
	C347	QEK61CM-106	E CAPACITOR	10μF, 16V
	C348	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C349	QEK60JM-476	E CAPACITOR	47μF, 6.3V
	C350	QEK60JM-476	E CAPACITOR	47μF, 6.3V
	C351	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C352	QETA0JM-477	E CAPACITOR	470μF, 6.3V
	C353	QFN41HJ-104	M CAPACITOR	0.1μF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C354	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	L301	PU59152-100J	COIL	10μH
	L302	PU48530-101K	COIL	100μH
	L303	PU48530-101K	COIL	100μH
	L304	PU48530-101K	COIL	100μH
	L305	PU48530-101K	COIL	100μH
	L306	PU48530-101K	COIL	100μH
	L307	PU48530-101K	COIL	100μH
	L309	PU59153-822J	COIL	8.2mH
	L310	PU48530-101K	COIL	100μH
	L311	PU59152-180J	COIL	18μH
	EQ301	PU54838	EQUALIZER	
	BPF301	PU57072	BAND PASS FILTER	

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13. AUDIO CONTROL HEAD BOARD 〈12〉

	PWBA1	PB40029	AC HEAD PWB
	CN1	PU58844-104B	CAP HOUSING
	CN2	PU58844-103	CAP HOUSING

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14. DEMODULATOR BOARD ASSEMBLY 〈14〉

	PWBA	PB20242D	DEMODULATOR BOARD ASSEMBLY
	IC1	TDA3800GS	IC
	Q1	DTC114ES	TRANSISTOR
		or UN4211	TRANSISTOR
		or 2SC3402	TRANSISTOR
	Q2	2SD1292(QR)	TRANSISTOR
		or 2SC3068	TRANSISTOR
	Q3	DTC114ES	TRANSISTOR
		or UN4211	TRANSISTOR
		or 2SC3402	TRANSISTOR
	Q4	DTC114ES	TRANSISTOR
		or 2SC3402	TRANSISTOR
		or UN4211	TRANSISTOR
	Q5	DTC114ES	TRANSISTOR
		or 2SC3402	TRANSISTOR
		or UN4211	TRANSISTOR
	Q6	DTC114ES	TRANSISTOR
		or 2SC3402	TRANSISTOR
		or UN4211	TRANSISTOR

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
Q7	DTC144ES	TRANSISTOR	
or	2SC3399	TRANSISTOR	
or	UN4213	TRANSISTOR	
Q8	DTC114ES	TRANSISTOR	
or	UN4211	TRANSISTOR	
or	2SC3402	TRANSISTOR	
Q9	2SD1450S,T	TRANSISTOR	
or	2SD1292(QR)	TRANSISTOR	
Q10	2SD1450S,T	TRANSISTOR	
or	2SD1292(QR)	TRANSISTOR	
D1	1SS133	DIODE	
D2	1SS133	DIODE	
D3	1SS133	DIODE	
D4	1SS133	DIODE	
D6	1SS133	DIODE	
R1	QRD161J-103	RESISTOR	10KΩ, 1/6W
R2	QVZ3518-103	V RESISTOR, SEPARATION ADJ	10KΩ
R3	QRD161J-153	RESISTOR	15KΩ, 1/6W
R4	QRD161J-331	RESISTOR	330Ω, 1/6W
R5	QRD161J-821	RESISTOR	820Ω, 1/6W
R6	QRD161J-102	RESISTOR	1KΩ, 1/6W
R7	QRD161J-104	RESISTOR	100KΩ, 1/6W
R8	QRD161J-154	RESISTOR	150KΩ, 1/6W
R9	QRD161J-271	RESISTOR	270Ω, 1/6W
R10	QRD161J-273	RESISTOR	27KΩ, 1/6W
R11	QRD161J-103	RESISTOR	10KΩ, 1/6W
R12	QRD161J-103	RESISTOR	10KΩ, 1/6W
R13	QRD161J-103	RESISTOR	10KΩ, 1/6W
R14	QRD161J-103	RESISTOR	10KΩ, 1/6W
R15	QRD161J-103	RESISTOR	10KΩ, 1/6W
R16	QRD161J-103	RESISTOR	10KΩ, 1/6W
R17	QRD161J-103	RESISTOR	10KΩ, 1/6W
R21	QVZ3518-332	V RESISTOR, AUDIO L LEVEL	3.3KΩ
R22	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
R23	QRD161J-103	RESISTOR	10KΩ, 1/6W
R24	QVZ3518-332	V RESISTOR, AUDIO R LEVEL	3.3KΩ
R25	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
R26	QRD161J-103	RESISTOR	10KΩ, 1/6W
R27	QRD161J-821	RESISTOR	820Ω, 1/6W
R28	QRD161J-821	RESISTOR	820Ω, 1/6W
C1	QETC1CM-106	E CAPACITOR	10μF, 16V
C2	QFN31HK-392	M CAPACITOR	0.0039μF, 50V
C3	QFN31HK-392	M CAPACITOR	0.0039μF, 50V
C4	QFN31HK-392	M CAPACITOR	0.0039μF, 50V
C5	QETC1CM-106	E CAPACITOR	10μF, 16V
C6	QETC1CM-106	E CAPACITOR	10μF, 16V
C7	QETC1CM-476	E CAPACITOR	47μF, 16V
C8	QCF31HP-223	CAPACITOR	0.022μF, 50V
C9	QCC1HEK-473	CAPACITOR	0.047μF, 25V
C10	QFP31HJ-102	M CAPACITOR	0.001μF, 50V
C11	QETC1CM-477	E CAPACITOR	470μF, 16V
C12	QCC1HEK-473	CAPACITOR	0.047μF, 25V
C13	QETC1CM-106	E CAPACITOR	10μF, 16V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
C14	QETC1CM-106	E CAPACITOR	10μF, 16V
C15	QETC1CM-336	E CAPACITOR	33μF, 16V
C16	QETC1CM-107	E CAPACITOR	100μF, 16V
C17	QETC1HM-105	E CAPACITOR	1μF, 50V
C18	QETC1CM-476	E CAPACITOR	47μF, 16V
C19	QFN31HJ-123	M CAPACITOR	0.012μF, 50V
C20	QETC1CM-106	E CAPACITOR	10μF, 16V
C30	QFN31HJ-123	M CAPACITOR	0.012μF, 50V
BPF1	PU58226	BAND PASS FILTER	
CF1	PU52775	CERAMIC FILTER	
CF2	PU52775-2	CERAMIC FILTER	
T1	PU59489	COIL	
T2	PU59490	COIL	
T3	PU59243	FH TRAP	
T4	PU59243	FH TRAP	
CN1	PU58844-6	CAP HOUSING	
CN4	PU58844-2	CAP HOUSING	
CN5	PU58844-2	CAP HOUSING	

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15. TIMER BOARD ASSEMBLY 〈20〉

PWBA	PB20250AA	TIMER BOARD ASSEMBLY	
IC1	UPD75216ACW-A63	IC	
or	UPD75P216ACWA63	IC	
IC2	S-8053HNB	IC	
IC3	M5278L56	IC	
IC301	SDA5642	IC	
Q2	2SC3311A(RS)	TRANSISTOR	
or	2SC3199(GB)-TJK	TRANSISTOR	
Q3	DTC124ES	TRANSISTOR	
Q4	2SC3311A(RS)	TRANSISTOR	
or	2SC3199(GB)-TJK	TRANSISTOR	
Q5	DTC124ES	TRANSISTOR	
Q6	DTC124ES	TRANSISTOR	
D1	RD9.1ES-T1B2	ZENER DIODE	
or	HZS9.1EB2TJ	ZENER DIODE	
D6	1SS133	DIODE	
or	MA165	DIODE	
D7	1SS133	DIODE	
or	MA165	DIODE	
D8	1SS133	DIODE	
or	MA165	DIODE	
D9	1SS133	DIODE	
or	MA165	DIODE	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	D10	1SS133	DIODE	
	or	MA165	DIODE	
	D25	1SS133	DIODE	
	D26	1SS133	DIODE	
	D29	1SS133	DIODE	
	D30	1SS133	DIODE	
	D35	1SS133	DIODE	
	R3	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R4	QRD161J-682	RESISTOR	6.8KΩ, 1/6W
	R5	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R6	QRD161J-151	RESISTOR	150Ω, 1/6W
	R7	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R8	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R9	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R10	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R11	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R12	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R13	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R14	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R15	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R16	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R17	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R18	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R19	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R20	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R21	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R22	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R23	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R24	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R25	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R26	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R29	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R30	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R31	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R32	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R33	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R34	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R35	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R36	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R37	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R38	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R39	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R40	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R41	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R42	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R43	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R44	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R45	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R46	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R47	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R49	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
	R50	QRD161J-271	RESISTOR	270Ω, 1/6W
	R51	QRD161J-271	RESISTOR	270Ω, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R301	QRD161J-824	RESISTOR	820KΩ, 1/6W
	R302	QRD161J-101	RESISTOR	100Ω, 1/6W
	R303	QRD161J-562	RESISTOR	5.6KΩ, 1/6W
	R304	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R305	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R306	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R307	QRD161J-105	RESISTOR	1MΩ, 1/6W
	R308	QRD161J-824	RESISTOR	820KΩ, 1/6W
	R309	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R310	QRD161J-202	RESISTOR	2KΩ, 1/6W
	RA1	QRB067J-224	RESISTOR ARRAY	
	or	QRB069J-224	RESISTOR ARRAY	
	or	QRB069J-224C	RESISTOR ARRAY	
	RA2	QRB067J-104	NETWORK RESISTOR	
	or	QRB069J-104	NETWORK RESISTOR	
	or	QRB069J-104C	RESISTOR ARRAY	
	RA3	QRB047J-333	RESISTOR ARRAY	
	or	QRB049J-333	RARRAY	
	or	QRB049J-333C	RESISTOR ARRAY	
	RA4	QRB037J-104	NETWORK RESISTOR	
	or	QRB039J-104C	RESISTOR ARRAY	
	or	QRB039J-104	NETWORK RESISTOR	
	C1	QETC1EM-107	E CAPACITOR	100μF, 25V
	C3	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C4	PU60676-473	E CAPACITOR	0.047μF
	or	QEA40HZ-473	E CAPACITOR (DOUBLE)	0.047μF, 5.5V
	C5	QETC1CM-336	E CAPACITOR	33μF, 16V
	C6	QETC0JM-336	E CAPACITOR	33μF, 6.3V
	C7	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C8	QETC1CM-106	E CAPACITOR	10μF, 16V
	C9	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C10	QAT3123-200	TRIMMER CAPACITOR, VXO	
	C11	QCT30CH-120	CAPACITOR	12PF
	C301	QFN31HJ-103	M CAPACITOR	0.01μF, 50V
	C302	QFN31HJ-333	M CAPACITOR	0.033μF, 50V
	C303	QFN31HJ-103	M CAPACITOR	0.01μF, 50V
	C304	QETC1HM-104	E CAPACITOR	0.1μF, 50V
	C305	QCBB1HJ-151	CAPACITOR	150PF, 50V
	L1	PU48530-101K	COIL	100μH
⚠	X1	PU60226-2	CRYSTAL RESONATOR	
	TP1	PU56006	TEST PIN, GND	
	TP2	PU56006	TEST PIN	
	TP3	PU56006	TEST PIN, TEST	
	CN1	PU59555-8	CAP HOUSING	
	CN2	PU58844-9	CAP HOUSING	
	CN3	PU58844-6	CAP HOUSING	
	CN4	PU59555-12	CAP HOUSING	
	CN5	PU59555-3	CAP HOUSING	
	CN6	PU58844-2	CAP HOUSING	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
CN11	PU58844-2	CAP HOUSING
CN12	PU58844-2	CAP HOUSING
CN301	PU58844-6	CAP HOUSING
⚠ CP1	ICP-F10	CIRCUIT PROTECTOR

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16. OPERATION BOARD ASSEMBLY 〈22〉

PWBA	PB20253A-01	OPERATION BOARD ASSEMBLY	
R201	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
R202	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
R203	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
R204	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
R205	QRD161J-103	RESISTOR	10KΩ, 1/6W
R206	QRD161J-223	RESISTOR	22KΩ, 1/6W
R208	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
R209	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
R210	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
R211	QRD161J-103	RESISTOR	10KΩ, 1/6W
R212	QRD161J-223	RESISTOR	22KΩ, 1/6W
R215	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
R216	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
S1	PU57550	TACT SWITCH, 1	
or	PU53598	TACT SWITCH	
S2	PU57550	TACT SWITCH, 2	
or	PU53598	TACT SWITCH	
S3	PU57550	TACT SWITCH, 3	
or	PU53598	TACT SWITCH	
S4	PU57550	TACT SWITCH, 4	
or	PU53598	TACT SWITCH	
S5	PU57550	TACT SWITCH, 5	
or	PU53598	TACT SWITCH	
S6	PU57550	TACT SWITCH, 6	
or	PU53598	TACT SWITCH	
S7	PU57550	TACT SWITCH, 7	
or	PU53598	TACT SWITCH	
S8	PU57550	TACT SWITCH, 8/DAILY	
or	PU53598	TACT SWITCH	
S9	PU57550	TACT SWITCH, 9/REPEAT	
or	PU53598	TACT SWITCH	
S10	PU57550	TACT SWITCH, 0/AUX	
or	PU53598	TACT SWITCH	
S11	PU57550	TACT SWITCH, GOTO	
or	PU53598	TACT SWITCH	
S12	PU57550	TACT SWITCH, C. MEMORY	
or	PU53598	TACT SWITCH	
S13	PU57550	TACT SWITCH, C. PRESET	
or	PU53598	TACT SWITCH	
S14	PU57550	TACT SWITCH, DISP	
or	PU53598	TACT SWITCH	
S15	PU57550	TACT SWITCH, REC/OTR	
or	PU53598	TACT SWITCH	
S16	PU57550	TACT SWITCH, TIMER	
or	PU53598	TACT SWITCH	
S17	PU57550	TACT SWITCH, CH+/NEXT	
or	PU53598	TACT SWITCH	
S18	PU57550	TACT SWITCH, CH+/BACK	
or	PU53598	TACT SWITCH	
S19	PU57550	TACT SWITCH, SEARCH	
or	PU53598	TACT SWITCH	
S20	PU57550	TACT SWITCH, VPS/CH	
or	PU53598	TACT SWITCH	
S21	PU57550	TACT SWITCH, CANCEL/SKIP	
or	PU53598	TACT SWITCH	
S22	PU57550	TACT SWITCH, STORE	
or	PU53598	TACT SWITCH	
S23	PU57550	TACT SWITCH, FINE+	
or	PU53598	TACT SWITCH	
S24	PU57550	TACT SWITCH, FINE+	
or	PU53598	TACT SWITCH	
S25	PU57550	TACT SWITCH, C. ADJ	
or	PU53598	TACT SWITCH	
S26	PU57550	TACT SWITCH, PROG	
or	PU53598	TACT SWITCH	
S27	PU57550	TACT SWITCH, SP/LP	
or	PU53598	TACT SWITCH	
S29	PU57550	TACT SWITCH, SIMUL	
or	PU53598	TACT SWITCH	
S201	PU57550	TACT SWITCH, STOP	
or	PU53598	TACT SWITCH	
S202	PU57550	TACT SWITCH, PAUSE/STILL	
or	PU53598	TACT SWITCH	
S203	PU57550	TACT SWITCH, PLAY	
or	PU53598	TACT SWITCH	
S204	PU57550	TACT SWITCH, REW	
or	PU53598	TACT SWITCH	
S205	PU57550	TACT SWITCH, FF	
or	PU53598	TACT SWITCH	
S206	PU57550	TACT SWITCH, SEARCH(+)	
or	PU53598	TACT SWITCH	
S207	PU57550	TACT SWITCH, SEARCH(+)	
or	PU53598	TACT SWITCH	
S209	PU57550	TACT SWITCH, INSERT	
or	PU53598	TACT SWITCH	
S210	PU57550	TACT SWITCH, S-VHS	
or	PU53598	TACT SWITCH	
S211	PU57550	TACT SWITCH, ERASE	
or	PU53598	TACT SWITCH	
S212	PU57550	TACT SWITCH, MARK	
or	PU53598	TACT SWITCH	
S213	PU57550	TACT SWITCH, A.MON	
or	PU53598	TACT SWITCH	
S214	PU57550	TACT SWITCH, MIX	
or	PU53598	TACT SWITCH	
S217	PU57550	TACT SWITCH, A.DUB	
or	PU53598	TACT SWITCH	
S219	PU57550	TACT SWITCH, EJECT	
or	PU53598	TACT SWITCH	
CN1	PU60566-116	FPC CONNECTOR	

17. SW/JACK BOARD ASSEMBLY 〈26〉〈36〉

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PB10153F	SW/JACK BOARD ASSEMBLY	

— SW BOARD ASSEMBLY 〈26〉 —

PWBA1	PB10153F1	SWITCH BOARD ASSEMBLY	
D201	SLH-34VT3F	LE DIODE, POWER	
R200	QRD161J-102	RESISTOR	1KΩ, 1/6W
R201	QRD161J-331	RESISTOR	330Ω, 1/6W
R213	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
R401	QRD161J-823	RESISTOR	82KΩ, 1/6W
R402	QRD161J-333	RESISTOR	33KΩ, 1/6W
R403	QRD161J-333	RESISTOR	33KΩ, 1/6W
S215	PU57550	TACT SWITCH, POWER	
or	PU53598	TACT SWITCH	
S401	PU58488-1-1	SLIDE SWITCH, INPUT SEL	
S405	PU58486-1-1	SLIDE SWITCH, EDIT	
S407	PU58488-1-1	SLIDE SWITCH, LEVEL IND	
S408	PU58486-1-1	SLIDE SWITCH, TV SOUND SEL	
S409	PU58486-1-1	SLIDE SWITCH, ALC	
S410	PU58486-1-1	SLIDE SWITCH, AC ONLINE	
S418	PU58487-1-1	SLIDE SWITCH, MONITOR SEL	
HD1	PQM30038-3	LED HOLDER	

— JACK BOARD ASSEMBLY 〈36〉 —

PWBA2	PB10153A2-04	JACK BOARD ASSEMBLY	
R231	QRD161J-103	RESISTOR	10KΩ, 1/6W
R404	PU60565	V RESISTOR, H.P. LEVEL	
LC1	PU59885-223	N FILTER	
LC2	PU59885-223	N FILTER	
J401	PU58356-2	JACK (HEADPHONE)	
J402	PU58355-2	MIC JACK	

18. DISPLAY/STEP BOARD ASSY 〈27〉〈37〉

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PB10343A	DIS/STEP BOARD ASSEMBLY	

— DISPALY BOARD ASSEMBLY 〈27〉 —

PWBA1	PB10343A1	DISPLAY BOARD ASSEMBLY	
IC101	MSC7112-01SS	IC	
IC102	MSC1146BRS	IC	
IC103	SBX1492-01	INFRARED RAYS UNIT	
Q101	2SK658	FE TRANSISTOR	
Q102	DTC124ES	TRANSISTOR	
Q103	DTC124ES	TRANSISTOR	
Q104	DTC124ES	TRANSISTOR	
D101	SLR-55VC3F	LE DIODE, MARK	
D102	SLR-55VC3F	LE DIODE, ERASE	
D103	MTZ5.1B	ZENER DIODE	
D104	SLR-55VC3F	LE DIODE, STEREO	
D105	SLR-55MC3F	LE DIODE, BILINGUAL	
D107	SLR-55MC3F	LE DIODE, S-CASSETTE	
D109	SLR-34MC3F	LE DIODE, S-VHS	
D110	SLR-34MC3F	LE DIODE, S-VHS	
D111	SLR-34MC3F	LE DIODE, S-VHS	
D112	SLR-55MC3F	LE DIODE, AT	
D113	SLR-34MC3F	LE DIODE, MAC	
D114	SLR-34MC3F	LE DIODE, MAC	
D115	SLR-34MC3F	LE DIODE, MAC	
D116	SLR-55VC3F	LE DIODE, RADIO	
R101	QRD161J-102	RESISTOR	1KΩ, 1/6W
R102	QRD161J-102	RESISTOR	1KΩ, 1/6W
R103	QRD161J-102	RESISTOR	1KΩ, 1/6W
R104	QRD161J-273	RESISTOR	27KΩ, 1/6W
R105	QRD161J-221	RESISTOR	220Ω, 1/6W
R106	QRD161J-221	RESISTOR	220Ω, 1/6W
R107	QRD161J-102	RESISTOR	1KΩ, 1/6W
R108	QRD161J-103	RESISTOR	10KΩ, 1/6W
R109	QRD161J-103	RESISTOR	10KΩ, 1/6W
R110	QRD161J-103	RESISTOR	10KΩ, 1/6W
R111	QRD161J-153	RESISTOR	15KΩ, 1/6W
R112	QRD161J-104	RESISTOR	100KΩ, 1/6W
R113	QRD161J-103	RESISTOR	10KΩ, 1/6W
R114	QRD161J-101	RESISTOR	100Ω, 1/6W
R115	QRD161J-101	RESISTOR	100Ω, 1/6W
R116	QRD161J-103	RESISTOR	10KΩ, 1/6W
R117	QRD161J-101	RESISTOR	100Ω, 1/6W
R118	QRD161J-101	RESISTOR	100Ω, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R119	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R120	QRD161J-471	RESISTOR	470Ω, 1/6W
	R121	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R122	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R123	QRD161J-561	RESISTOR	560Ω, 1/6W
	R124	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R125	PU59375	SLIDE VR., REC LEVEL	
	R126	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R127	QRD161J-561	RESISTOR	560Ω, 1/6W
	R128	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R207	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R214	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R215	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R216	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R217	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R402	PU60257	V RESISTOR, PICTURE SHARPNESS	
	C101	QCBB1HJ-101	CAPACITOR	100PF, 50V
	C102	QER61HM-104	E CAPACITOR	0.1μF, 50V
	C103	QER60JM-336	E CAPACITOR	33μF, 6.3V
	C104	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C105	QERF1VM-106	E CAPACITOR	10μF, 35V
	C106	QEN41EM-226	E CAPACITOR	22μF, 25V
	C107	QEN41EM-226	E CAPACITOR	22μF, 25V
	C108	QERF1CM-106	E CAPACITOR	10μF, 16V
	C109	QFJ41HJ-223	M CAPACITOR	0.022μF, 50V
	C110	QFJ41HJ-333	M CAPACITOR	0.033μF, 50V
	C111	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C112	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C113	QERF1VM-226	E CAPACITOR	22μF, 35V
	C114	QERF0JM-107	E CAPACITOR	100μF, 6.3V
	C115	QCSB1HJ-330	CAPACITOR	33PF, 50V
	C116	QCSB1HJ-330	CAPACITOR	33PF, 50V
	C117	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	S208	PU60392-Z	TACT SWITCH, TRACKING(+)	
	S216	PU60392-Z	TACT SWITCH, TRACKING(+)	
	FDP1	PU60660-2	FLUORESCENT DISPLAY PANEL	
	HD1	PQ42602	LED SHADE	
	HD2	PQ42602	LED SHADE	
	HD3	PQM30038-1-2	LED HOLDER	
	HD4	PQ31309	FDP HOLDER (L)	
	HD5	PQ31310	FDP HOLDER (R)	
	SLD1	PU56919	RASTER METAL	
	CN102	PU59513-7	CAP HOUSING	
	CN105	PU59513-9	CAP HOUSING	
	CN107	PU59555-7	CAP HOUSING	
	CN108	PU59555-4	CAP HOUSING	
	CN109	PU59513-2	CAP HOUSING	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	CN112	PU59513-3	CAP HOUSING	

— STEP BOARD ASSEMBLY ⟨37⟩ —

	PWBA2	PB10343A2	STEP BOARD ASSEMBLY	
	CL1	PU59311-4	WIRE CLAMP	
	CN1	PU59555-12	CAP HOUSING	
	CN2	PU59555-4	CAP HOUSING	
	CN3	PU60566-116	FPC CONNECTOR	

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19. SERVO SUB BOARD ASSEMBLY ⟨39⟩

	PWBA	PB30095A-02	SERVO SUB BOARD ASSEMBLY	
	IC1	BU3791	IC	
	Q1	DTC144ES	TRANSISTOR	
	or	UN4213	TRANSISTOR	
	or	2SC3399	TRANSISTOR	
	Q2	DTC124ES	TRANSISTOR	
	Q3	DTC144WS	TRANSISTOR	
	D1	1SS133	DIODE	
	or	MA165	DIODE	
	R1	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R2	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R3	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R4	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R5	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R6	QRD161J-822	RESISTOR	8.2KΩ, 1/6W
	R7	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R8	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R9	QRD161J-563	RESISTOR	56KΩ, 1/6W
	R10	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	C1	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C2	QCC11CK-104	CAPACITOR	0.1μF, 16V
	C3	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C4	QCBB1HJ-121	CAPACITOR	120PF, 50V
	C5	QEK61AM-336	E CAPACITOR	33μF, 10V
	C6	QFN31HJ-103	M CAPACITOR	0.01μF, 50V
	CN1	PU59555-7	CAP HOUSING	
	CN2	PU58844-7	CAP HOUSING	
	CN5	PU58844-2	CAP HOUSING	

20. PRE/REC BOARD ASSEMBLY (43)

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	PB10194A-01	PRE/REC BOARD ASSEMBLY
IC1	TA8609P	IC
IC2	TA8733F	IC
IC3	AN6392	IC
Q1	2SC2412K	TRANSISTOR
Q2	2SC2412K	TRANSISTOR
Q3	2SC2412K	TRANSISTOR
Q4	2SC2412K	TRANSISTOR
Q5	2SC2412K	TRANSISTOR
Q7	2SC2412K	TRANSISTOR
Q8	2SA1037K	TRANSISTOR
Q9	2SA1037K	TRANSISTOR
Q10	DTC144EK	TRANSISTOR
Q11	DTC144EK	TRANSISTOR
Q12	DTC124EK	TRANSISTOR
Q13	2SA1036K(R)	TRANSISTOR
Q14	2SA1036K(R)	TRANSISTOR
Q15	DTC124EK	TRANSISTOR
Q16	DTC144WK	TRANSISTOR
Q101	DTA124EK	TRANSISTOR
Q102	DTA124EK	TRANSISTOR
Q103	DTC144WK	TRANSISTOR
Q104	2SA1037K	TRANSISTOR
Q105	2SC2412K	TRANSISTOR
Q106	2SC2412K	TRANSISTOR
Q107	2SA1037K	TRANSISTOR
Q108	2SC2412K	TRANSISTOR
Q109	2SA1037K	TRANSISTOR
Q110	DTC124EK	TRANSISTOR
Q111	2SC2412K	TRANSISTOR
Q112	2SC2412K	TRANSISTOR
Q113	2SC2412K	TRANSISTOR
Q114	2SC2412K	TRANSISTOR
Q115	2SC2412K	TRANSISTOR
Q116	2SC2412K	TRANSISTOR
Q117	2SC2412K	TRANSISTOR
Q118	2SA1037K	TRANSISTOR
Q119	2SC2412K	TRANSISTOR
D1	DAN202K	DIODE
D2	DAN202K	DIODE
D3	DAN202K	DIODE
D5	DAN202K	DIODE
D6	1SS133	DIODE
D101	DAN202K	DIODE
D102	DAN202K	DIODE
D103	DAP202K	DIODE
D104	MA157	DIODE
D105	MA157	DIODE
R1	QRSA08J-100YN	RESISTOR 10Ω, 1/10W
R2	QRSA08J-272YN	RESISTOR 2.7KΩ, 1/10W
R3	QRSA08J-100YN	RESISTOR 10Ω, 1/10W
R4	QRSA08J-272YN	RESISTOR 2.7KΩ, 1/10W
R5	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R6	QRSA08J-100YN	RESISTOR 10Ω, 1/10W
R7	QRSA08J-100YN	RESISTOR 10Ω, 1/10W
R8	QRSA08J-272YN	RESISTOR 2.7KΩ, 1/10W
R9	QRSA08J-272YN	RESISTOR 2.7KΩ, 1/10W
R10	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R11	QVZ3531-152	V RESISTOR, SP CH-1 Q 1.5KΩ
R12	QVZ3531-152	V RESISTOR, LP CH-2 Q 1.5KΩ
R13	QVZ3531-152	V RESISTOR, LP CH-1 Q 1.5KΩ
R14	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R15	QVZ3531-152	V RESISTOR, SP CH-2 Q 1.5KΩ
R19	QRSA08J-122YN	RESISTOR 1.2KΩ, 1/10W
R20	QRSA08J-221YN	RESISTOR 220Ω, 1/10W
R21	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W
R22	QRSA08J-122YN	RESISTOR 1.2KΩ, 1/10W
R23	QRSA08J-221YN	RESISTOR 220Ω, 1/10W
R24	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W
R25	QRSA08J-122YN	RESISTOR 1.2KΩ, 1/10W
R26	QRSA08J-122YN	RESISTOR 1.2KΩ, 1/10W
R27	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R28	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R29	QRSA08J-393YN	RESISTOR 39KΩ, 1/10W
R30	QRSA08J-393YN	RESISTOR 39KΩ, 1/10W
R31	QRD161J-391	RESISTOR 390Ω, 1/6W
R32	QRSA08J-471YN	RESISTOR 470Ω, 1/10W
R33	QRSA08J-391YN	RESISTOR 390Ω, 1/10W
R34	QRSA08J-623YN	RESISTOR 62KΩ, 1/10W
R35	QRSA08J-821YN	RESISTOR 820Ω, 1/10W
R36	QRSA08J-680YN	RESISTOR 68Ω, 1/10W
R37	QRSA08J-820YN	RESISTOR 82Ω, 1/10W
R38	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W
R39	QRSA08J-472YN	RESISTOR 4.7KΩ, 1/10W
R40	QRSA08J-222YN	RESISTOR 2.2KΩ, 1/10W
R41	QRSA08J-332YN	RESISTOR 3.3KΩ, 1/10W
R42	QRSA08J-393YN	RESISTOR 39KΩ, 1/10W
R43	QRD161J-222	RESISTOR 2.2KΩ, 1/6W
R44	QRSA08J-393YN	RESISTOR 39KΩ, 1/10W
R45	QRSA08J-222YN	RESISTOR 2.2KΩ, 1/10W
R46	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R47	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
⚠ R48	PU52108-150	POSITIVE THERMISTOR
R49	QRD161J-333	RESISTOR 33KΩ, 1/6W
R50	QRSA08J-101YN	RESISTOR 100Ω, 1/10W
R51	QRSA08J-103YN	RESISTOR 10KΩ, 1/10W
R52	QRSA08J-823YN	RESISTOR 82KΩ, 1/10W
R53	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W
R54	QRSA08J-821YN	RESISTOR 820Ω, 1/10W
R55	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W
R56	QRSA08J-102YN	RESISTOR 1KΩ, 1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R101	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R102	QRSA08J-273YN	RESISTOR	27KΩ, 1/10W
	R103	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R104	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R105	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
	R106	PU57457-152	V RESISTOR, FREQ RES (S-MODE, LP)	
	R107	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R108	PU57457-222	V RESISTOR, FREQ RES (S-MODE, SP)	
	R109	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
	R110	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
	R111	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
	R112	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R113	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
	R114	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
	R117	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R118	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R119	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
	R120	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R121	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R122	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
	R123	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
	R124	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
	R125	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R126	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
	R127	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R128	QRSA08J-681YN	RESISTOR	680Ω, 1/10W
	R129	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R130	PU57457-682	V RESISTOR, FREQ RES (N-MODE, SP)	
	R131	PU57457-332	V RESISTOR, FREQ RES (N-MODE, LP)	
	R134	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R135	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R136	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R137	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
	R138	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R139	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R140	QRSA08J-392YN	RESISTOR	3.9KΩ, 1/10W
	R141	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R142	QRSA08J-682YN	RESISTOR	6.8KΩ, 1/10W
	R143	QRSA08J-361YN	RESISTOR	360Ω, 1/10W
	R144	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
	R145	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
	R146	QRSA08J-332YN	RESISTOR	3.3KΩ, 1/10W
	R147	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R148	QRSA08J-184YN	RESISTOR	180KΩ, 1/10W
	R149	QRSA08J-682YN	RESISTOR	6.8KΩ, 1/10W
	R150	QRSA08J-184YN	RESISTOR	180KΩ, 1/10W
	R151	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R152	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R154	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
	C1	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C2	PU60733-200	TRIMMER CAPACITOR, LP CH-2 F0	20PF
	C3	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C4	PU60733-200	TRIMMER CAPACITOR, LP CH-1 F0	20PF
	C5	PU60733-200	TRIMMER CAPACITOR, SP CH-2 F0	20PF
	C6	QCFA1HZ-103	CAPACITOR	0.01μF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C7	PU60733-100	TRIMMER CAPACITOR, SP CH-1 F0	10PF
	C8	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C9	QER51HM-105	E CAPACITOR	1μF, 50V
	C10	QER51HM-105	E CAPACITOR	1μF, 50V
	C11	QER51HM-105	E CAPACITOR	1μF, 50V
	C12	QER51HM-105	E CAPACITOR	1μF, 50V
	C13	QER50JM-476	E CAPACITOR	47μF, 6.3V
	C14	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C15	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C16	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C17	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C18	QCSA1HJ-560	CAPACITOR	56PF, 50V
	C19	QCSA1HJ-151	CAPACITOR	150PF, 50V
	C20	QCSA1HJ-271	CAPACITOR	270PF, 50V
	C21	QER50JM-476	E CAPACITOR	47μF, 6.3V
	C22	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C23	QCSA1HJ-331	CAPACITOR	330PF, 50V
	C24	QCSA1HJ-121	CAPACITOR	120PF, 50V
	C25	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C26	QER51HM-104	E CAPACITOR	0.1μF, 50V
	C27	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C28	QER51HM-105	E CAPACITOR	1μF, 50V
	C29	QER51HM-105	E CAPACITOR	1μF, 50V
	C30	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C31	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C32	QER51CM-476	E CAPACITOR	47μF, 16V
	C33	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C34	QFN41HJ-273	M CAPACITOR	0.027μF, 50V
	C35	QFN31HJ-103	M CAPACITOR	0.01μF, 50V
	C36	QER51HM-105	E CAPACITOR	1μF, 50V
	C37	QCSA1HJ-470	CAPACITOR	47PF, 50V
	C38	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C39	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C40	QCSA1HJ-7R0	CAPACITOR	7PF, 50V
	C41	QETC1CM-106	E CAPACITOR	10μF, 16V
	C42	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C43	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C44	QCSA1HJ-121	CAPACITOR	120PF, 50V
	C45	QCSA1HJ-101	CAPACITOR	100PF, 50V
	C46	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C47	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C48	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C49	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C50	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C51	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C52	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C53	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C102	QCSA1HJ-180	CAPACITOR	18PF, 50V
	C103	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C104	QCSA1HJ-390	CAPACITOR	39PF, 50V
	C106	QCSA1HJ-180	CAPACITOR	18PF, 50V
	C107	QCSA1HJ-390	CAPACITOR	39PF, 50V
	C108	QCSA1HJ-120	CAPACITOR	12PF, 50V
	C109	QCSA1HJ-100	CAPACITOR	10PF, 50V
	C110	QER50JM-476	E CAPACITOR	47μF, 6.3V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C111	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C112	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C113	QCSA1HJ-360	CAPACITOR	36PF, 50V
	C114	QCSA1HJ-220	CAPACITOR	22PF, 50V
	C115	QCSA1HJ-180	CAPACITOR	18PF, 50V
	C117	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C118	QCSA1HJ-470	CAPACITOR	47PF, 50V
	C120	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C121	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C122	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C123	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C124	QCSA1HJ-681	CAPACITOR	680PF, 50V
	C125	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C126	QER51HM-105	E CAPACITOR	1μF, 50V
	C127	QER51EM-475	E CAPACITOR	4.7μF, 25V
	C128	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C129	QER50JM-476	E CAPACITOR	47μF, 6.3V
	C130	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C131	QCSA1HJ-221	CAPACITOR	220PF, 50V
	C132	QCSA1HJ-120	CAPACITOR	12PF, 50V
	C133	QCSA1HJ-7R0	CAPACITOR	7PF, 50V
	C134	QCSA1HJ-680	CAPACITOR	68PF, 50V
	C138	QCSB1HJ-100	CAPACITOR	10PF, 50V
	L1	PU48530-101K	COIL	100μH
	L2	PU59152-181J	COIL	180μH
	L3	PU48530-101K	COIL	100μH
	L4	PU59152-820J	COIL	82μH
	L5	PU59152-101J	COIL	100μH
	L6	PU48530-101K	COIL	100μH
	L7	PU59152-4R7K	COIL	4.7μH
	L8	PU59152-270J	COIL	27μH
	L9	PU59152-330J	COIL	33μH
	L10	PU59152-330J	COIL	33μH
	L11	PU59152-2R2K	COIL	2.2μH
	L12	PU59152-100J	COIL	10μH
	L13	PU59152-150J	COIL	15μH
	L101	PU59152-560J	COIL	56μH
	L102	PU59152-150J	COIL	15μH
	L103	PU59152-390J	COIL	39μH
	L104	PU59152-221J	COIL	220μH
	L105	PU59152-100J	COIL	10μH
	L106	PU48530-101K	COIL	100μH
	L107	PU59152-820J	COIL	82μH
	L108	PU59152-330J	COIL	33μH
	L109	PU59152-820J	COIL	82μH
	L110	PU59152-220J	COIL	22μH
	L111	PU59152-220J	COIL	22μH
	L113	PU48530-101K	COIL	100μH
	L114	PU59152-8R2J	COIL	8.2μH
	L115	PU59152-121J	COIL	120μH
	BKT1	PQ42955	BOARD BRACKET	
	ETH1	PQ40433-2	EARTH LUG	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	SCW1	DPSP2606Z	SCREW, X2, FOR PRE/REC BOARD	
	SCW2	DPSP2606Z	SCREW, FOR BRACKET	
	SLD1	PU36485	SHIELD PLATE	
	SLD2	PU36486	SHIELD CASE	
	SPC1	WBS2600Z	T.L. WASHER	
	SPC2	PU59210-001	W. LOKING SPACER, X5	
	WR1	PW30109-50AAZZ7	PARALLEL WIRE	
	WR2	PW30109-50AAZZ7	PARALLEL WIRE	
	TP1	PU56008	TEST PIN, X8, (TP1, 3-7, GND1, 2)	
	CN1	PU56258-10	CAP HOUSING	
	CN2	PU58844-5	CAP HOUSING	
	CN3	PU58844-3R	CAP HOUSING	
	CN4	PU58844-2	CAP HOUSING	
	CN5	PU58844-4	CAP HOUSING	
	CN6	PU58844-5	CAP HOUSING	
	CN7	PU58844-3	CAP HOUSING	

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21. FLYING ERASE BOARD ASSEMBLY (46)

	PWBA	PB30092A	FLYING ERASE BOARD ASSEMBLY	
	Q1	2SA933S	TRANSISTOR	
	Q2	2SC1741S(QR)	TRANSISTOR	
	Q3	2SA933S(Q)	TRANSISTOR	
	Q4	2SD639R	TRANSISTOR	
	Q5	2SD639R	TRANSISTOR	
	D1	UZ8.2BSC	ZENER DIODE	
	D2	1SS133	DIODE	
	R1	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R2	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R3	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R4	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R5	QRD161J-183	RESISTOR	18KΩ, 1/6W
	R6	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R7	QRD161J-121	RESISTOR	120Ω, 1/6W
	R8	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R9	QRD161J-121	RESISTOR	120Ω, 1/6W
	R10	QRD161J-101	RESISTOR	100Ω, 1/6W
	C1	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C2	QCC31EJ-123	CAPACITOR	0.012μF, 25V
	C3	QCSB1HJ-560	CAPACITOR	56PF, 50V
	C4	QCBB1HJ-820	CAPACITOR	82PF, 50V
	C5	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C6	QCBB1HJ-820	CAPACITOR	82PF, 50V
	C8	QCT25UJ-181	CAPACITOR	180PF

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C9	QCT05UJ-330	CAPACITOR	33PF
	L1	PU48530-560J	COIL	56μH
	L2	PU48530-3R3K	COIL	3.3μH
	L3	PU48530-3R3K	COIL	3.3μH
	L4	PU59152-101J	COIL	100μH
	T1	PU56175	S.TRANS	
	SLD1	PU60779	SHIELD CASE	
	SLD2	PU60781	SHIELD COVER	
	SLD3	PU60780	SHIELD PLATE	
	CN1	PU58844-3	CAP HOUSING	
	CN2	PU58844-2R	CAP HOUSING	
	CN3	PU58844-2	CAP HOUSING	

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22. SERVO BOARD ASSEMBLY ⟨48⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB10152A-01	SERVO BOARD ASSEMBLY	
	IC1	HD49722NT	IC	
	IC2	BU2767S	IC	
	Q1	DTC124ES	TRANSISTOR	
	or	UN4212	TRANSISTOR	
	or	2SC3400	TRANSISTOR	
	Q2	DTA124ES	TRANSISTOR	
	or	UN4112	TRANSISTOR	
	or	2SA1346	TRANSISTOR	
	Q3	DTA124ES	TRANSISTOR	
	or	UN4112	TRANSISTOR	
	or	2SA1346	TRANSISTOR	
	Q4	DTA124ES	TRANSISTOR	
	or	UN4112	TRANSISTOR	
	or	2SA1346	TRANSISTOR	
	Q5	DTA124ES	TRANSISTOR	
	or	2SA1346	TRANSISTOR	
	or	UN4112	TRANSISTOR	
	Q6	DTC144ES	TRANSISTOR	
	or	UN4213	TRANSISTOR	
	or	2SC3399	TRANSISTOR	
	Q7	DTA124ES	TRANSISTOR	
	or	2SA1346	TRANSISTOR	
	or	UN4112	TRANSISTOR	
	D1	1SS133	DIODE	
	or	MA165	DIODE	
	D2	1SS133	DIODE	
	or	MA165	DIODE	
	D3	1SS133	DIODE	
	or	MA165	DIODE	
	D4	1SS133	DIODE	
	or	MA165	DIODE	
	D5	1SS133	DIODE	
	or	MA165	DIODE	
	D6	1SS133	DIODE	
	or	MA165	DIODE	
	D7	1SS133	DIODE	
	or	MA165	DIODE	
	D8	1SS133	DIODE	
	or	MA165	DIODE	
	D9	1SS133	DIODE	
	D10	1SS133	DIODE	
	D11	1SS133	DIODE	
	or	MA165	DIODE	
	D12	1SS133	DIODE	
	or	MA165	DIODE	
	D13	1SS133	DIODE	
	or	MA165	DIODE	
	D14	1SS133	DIODE	
	or	MA165	DIODE	
	D15	1SS133	DIODE	
	or	MA165	DIODE	
	D16	1SS133	DIODE	
	or	MA165	DIODE	
	D17	1SS133	DIODE	
	or	MA165	DIODE	
	D18	1SS133	DIODE	
	or	MA165	DIODE	
	D20	1SS133	DIODE	
	or	MA165	DIODE	
	R1	QRSA08J-682YN	RESISTOR	6.8KΩ, 1/10W
	R2	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R3	QRSA08J-155YN	RESISTOR	1.5MΩ, 1/10W
	R4	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R5	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R6	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R7	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R8	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R9	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R10	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R11	QRSA08J-273YN	RESISTOR	27KΩ, 1/10W
	R12	QRSA08J-475YN	RESISTOR	4.7MΩ, 1/10W
	R13	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R14	QRSA08J-392YN	RESISTOR	3.9KΩ, 1/10W
	R15	QRSA08J-153YN	RESISTOR	15KΩ, 1/10W
	R16	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
	R17	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R18	QRSA08J-273YN	RESISTOR	27KΩ, 1/10W
	R19	QRSA08K-395YN	RESISTOR	3.9MΩ, 1/10W
	R20	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R21	QRSA08J-273YN	RESISTOR	27KΩ, 1/10W
	R22	QRSA08J-274YN	RESISTOR	270KΩ, 1/10W
	R23	QRSA08J-393YN	RESISTOR	39KΩ, 1/10W
	R24	QRSA08J-475YN	RESISTOR	4.7MΩ, 1/10W
	R25	QRSA08J-334YN	RESISTOR	330KΩ, 1/10W
	R26	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R27	QRSA08J-154YN	RESISTOR	150KΩ, 1/10W
	R28	QRSA08J-154YN	RESISTOR	150KΩ, 1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R30	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R31	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R32	QVZ3521-684	V RESISTOR, SW POINT	680KΩ
	R33	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R34	QRSA06J-222YN	RESISTOR	2.2KΩ, 1/10W
	R35	QRSA06J-823YN	RESISTOR	82KΩ, 1/10W
	R36	QVZ3521-474	V RESISTOR, LP X2 NOR TK	470KΩ
	R37	QRSA06J-103YN	RESISTOR	10KΩ, 1/10W
	R38	QVZ3524-474	V RESISTOR, SP X2 NOR TK	470KΩ
	R39	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R40	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R41	QRD161J-334	RESISTOR	330KΩ, 1/6W
	R42	QRSA06J-103YN	RESISTOR	10KΩ, 1/10W
	R43	QRSA06J-123YN	RESISTOR	12KΩ, 1/10W
	R44	QRSA06J-822YN	RESISTOR	8.2KΩ, 1/10W
	R45	QRSA06J-223YN	RESISTOR	22KΩ, 1/10W
	R47	QRSA06J-123YN	RESISTOR	12KΩ, 1/10W
	R46	QRSA06J-392YN	RESISTOR	3.9KΩ, 1/10W
	R49	QRSA06J-123YN	RESISTOR	12KΩ, 1/10W
	R51	QRSA06J-822YN	RESISTOR	8.2KΩ, 1/10W
	R52	QRSA06J-104YN	RESISTOR	100KΩ, 1/10W
	R53	QRSA06J-684YN	RESISTOR	680KΩ, 1/10W
	R55	QVZ3521-224	V RESISTOR, SP SLOW	220KΩ
	R56	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R57	QRSA06J-154YN	RESISTOR	150KΩ, 1/10W
	R58	QRSA06J-274YN	RESISTOR	270KΩ, 1/10W
	R59	QVZ3521-104	V RESISTOR, LP SLOW	100KΩ
	R61	QRSA06J-684YN	RESISTOR	680KΩ, 1/10W
	R63	QRSA06J-104YN	RESISTOR	100KΩ, 1/10W
	C1	QCC11CK-102	CAPACITOR	0.001μF, 16V
	C2	QEK61AM-226	E CAPACITOR	22μF, 10V
	C3	QEK61AM-226	E CAPACITOR	22μF, 10V
	C4	QCSB1HJ-150	CAPACITOR	15PF, 50V
	C5	QCC11CK-473	CAPACITOR	0.047μF, 16V
	C6	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C7	QEK61HM-105	E CAPACITOR	1μF, 50V
	C8	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C9	QCC11CK-153	CAPACITOR	0.015μF, 16V
	C10	QCBC1HJ-561	CAPACITOR	560PF, 50V
	C11	QCC11CK-102	CAPACITOR	0.001μF, 16V
	C12	QEK61HM-105	E CAPACITOR	1μF, 50V
	C13	QEK61AM-226	E CAPACITOR	22μF, 10V
	C14	QCBB1HJ-101	CAPACITOR	100PF, 50V
	C15	QCC11CK-102	CAPACITOR	0.001μF, 16V
	C16	QFV71HJ-274	TF CAPACITOR	0.27μF, 50V
	C17	QFV71HJ-564	TF CAPACITOR	0.56μF, 50V
	C18	QFV71HJ-153	TF CAPACITOR	0.015μF, 50V
	C19	QEK61EM-475	E CAPACITOR	4.7μF, 25V
	C20	QEK61EM-475	E CAPACITOR	4.7μF, 25V
	C21	QEK61CM-106	E CAPACITOR	10μF, 16V
	C22	QEK61CM-106	E CAPACITOR	10μF, 16V
	C23	QFV71HJ-334	TF CAPACITOR	0.33μF, 50V
	C24	QFV71HJ-333	TF CAPACITOR	0.033μF, 50V
	C25	QCBB1HJ-471	CAPACITOR	470PF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C26	QFL31HJ-682	M CAPACITOR	0.0068μF, 50V
	C27	QFL31HJ-102	M CAPACITOR	0.001μF, 50V
	C28	QFV71HJ-124	TF CAPACITOR	0.12μF, 50V
	C29	QCF31HP-223	CAPACITOR	0.022μF, 50V
	C30	QCBB1HJ-101	CAPACITOR	100PF, 50V
	C31	QCBB1HJ-101	CAPACITOR	100PF, 50V
	C32	QCC11CK-102	CAPACITOR	0.001μF, 16V
	C33	QFV71HJ-224	TF CAPACITOR	0.22μF, 50V
	C34	QEK61AM-226	E CAPACITOR	22μF, 10V
	C35	QFV71HJ-393	TF CAPACITOR	0.039μF, 50V
	C36	QFV71HJ-274	TF CAPACITOR	0.27μF, 50V
	C37	QFV71HJ-124	TF CAPACITOR	0.12μF, 50V
	C38	QFV71HJ-393	TF CAPACITOR	0.039μF, 50V
	C39	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C40	QCBB1HJ-561	CAPACITOR	560PF, 50V
	C41	QFV71HJ-474	TF CAPACITOR	0.47μF, 50V
	C42	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	TH1	NTH5D223KA	THERMISTOR	
	or	NTH5D223LA	THERMISTOR	
	TP1	PU45908-3	TEST PIN, X2, (TP1, GND)	
	CN1	PU58844-4	CAP HOUSING	
	CN4	PU58931-14	HOUSING	
	CN5	PU58931-12	HOUSING	
	CN6	PU58844-8	CAP HOUSING	

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23. DECK TERMINAL BOARD ASSEMBLY ⟨51⟩⟨53⟩

PWBA	PB20013D-02	DECK TERMINAL BOARD ASSY	

— DECK TERMINAL BOARD ASSEMBLY ⟨51⟩ —

PWBA1	PB20013C1	DECK TERMINAL BOARD ASSY	
R1	QRD181J-151	RESISTOR	150Ω, 1/8W
R3	QRD181J-331	RESISTOR	330Ω, 1/8W
PS1	PU60271	PHOTO INTERRUPTER	
CN1	PEMC0722-017	WIRE TRAP	

— REC SAFETY BOARD ASSEMBLY ⟨53⟩ —

PWBA3	PB20013A3	REC SAFETY BOARD ASSY	
S1	PU58644-1-3	REC SAFETY SWITCH	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	

24. RELAY BOARD ASSEMBLY ⟨52⟩

PWBA2	PB20013C2-02	RELAY BOARD ASSY	
C1	QCC11EJ-104	CAPACITOR	0.1μF, 25V
LC1	PU59736-471	N FILTER	
LC2	PU59736-471	N FILTER	
K1	PU60281-5	FERRITE BEADS	
WR2	PW3013-G0ABZ62	PARALLEL WIRE	
or	PW3018-G0ABZ62	PARALLEL WIRE	

25. END SENSOR BOARD ASSEMBLY ⟨54⟩

PWBA4	PB20013A4	END SENSOR BOARD ASSY	
Q1	PN268R-NC	PHOTO TRANSISTOR	
HD1	PQ31047-1-4	E.S. HOLDER	
CN1	PU59945-102	WIRE SOCKET	

26. CASSETTE HOUSING BOARD ⟨56⟩

PWB1	PB30043	CASSETTE HOUSING BOARD	
or	PB30097	CASSETTE HOUSING BOARD	
Q1	PN268R-NC	PHOTO TRANSISTOR	
R1	QRD162J-471	RESISTOR	470Ω, 1/6W
PHS1	PU58879	PHOTO INTERRUPTER	
CN1	PU58844-106	CAP HOUSING	

27. UPPER DRUM BOARD ⟨62⟩⟨63⟩

PWB1	PDM3161	BOARD (UPPER DRUM), X2	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	

28. AUTO TRACKING BOARD ASSEMBLY ⟨83⟩

PWBA	PB20399A	AUTO TRACKING BOARD ASSEMBLY	
IC1	BU4066B	IC	
or	MC14066BCP	IC	
IC2	LM324N	IC	
or	BA10324	IC	
Q1	2SC1740S(RS)	TRANSISTOR	
or	2SC3199(G)-TJK	TRANSISTOR	
or	2SC3311A(RS)	TRANSISTOR	
or	2SC536SPA(FG)	TRANSISTOR	
Q2	2SC1740S(RS)	TRANSISTOR	
or	2SC536SPA(FG)	TRANSISTOR	
or	2SC3199(G)-TJK	TRANSISTOR	
or	2SC3311A(RS)	TRANSISTOR	
Q3	2SC1740S(RS)	TRANSISTOR	
or	2SC536SPA(FG)	TRANSISTOR	
or	2SC3199(G)-TJK	TRANSISTOR	
or	2SC3311A(RS)	TRANSISTOR	
Q4	DTA124ES	TRANSISTOR	
Q5	2SA1267(G)-TJK	TRANSISTOR	
or	2SA1309(RS)	TRANSISTOR	
or	2SA933S(RS)	TRANSISTOR	
Q6	2SC1740S(RS)	TRANSISTOR	
or	2SC536SPA(FG)	TRANSISTOR	
or	2SC3311A(RS)	TRANSISTOR	
or	2SC3199(G)-TJK	TRANSISTOR	
Q7	DTC144WS	TRANSISTOR	
Q9	2SC1740S(RS)	TRANSISTOR	
or	2SC3199(G)-TJK	TRANSISTOR	
or	2SC536SPA(FG)	TRANSISTOR	
or	2SC3311A(RS)	TRANSISTOR	
Q10	2SC1740S(RS)	TRANSISTOR	
or	2SC536SPA(FG)	TRANSISTOR	
or	2SC3199(G)-TJK	TRANSISTOR	
or	2SC3311A(RS)	TRANSISTOR	
D1	OA90	DIODE	
D2	OA90	DIODE	
D3	RD9.1ES-T1B3	ZENER DIODE	
or	UZ9.1BSC	ZENER DIODE	
D4	1SS133	DIODE	
or	MA165	DIODE	
D5	1SS133	DIODE	
or	MA165	DIODE	
D6	1SS133	DIODE	
or	MA165	DIODE	
R1	QRD161J-104	RESISTOR	100KΩ, 1/6W
R2	QRD161J-104	RESISTOR	100KΩ, 1/6W
R3	QRD161J-102	RESISTOR	1KΩ, 1/6W
R4	QRD161J-102	RESISTOR	1KΩ, 1/6W
R5	QRD161J-683	RESISTOR	68KΩ, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R6	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R7	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R8	QRD161J-221	RESISTOR	220Ω, 1/6W
	R9	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R10	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R11	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R12	QRD161J-105	RESISTOR	1MΩ, 1/6W
	R13	QRD161J-105	RESISTOR	1MΩ, 1/6W
	R14	QRD161J-105	RESISTOR	1MΩ, 1/6W
	R15	QRD161J-105	RESISTOR	1MΩ, 1/6W
	R18	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R19	QRD161J-394	RESISTOR	390KΩ, 1/6W
	R20	QRD161J-824	RESISTOR	820KΩ, 1/6W
	R23	QRD161J-822	RESISTOR	8.2KΩ, 1/6W
	R24	QRD161J-123	RESISTOR	12KΩ, 1/6W
	R25	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R28	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R29	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R30	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R31	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R32	QRD161J-821	RESISTOR	820Ω, 1/6W
	R33	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
	R34	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R35	QRD161J-102	RESISTOR	1KΩ, 1/6W
	C1	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C2	QCBB1HJ-271	CAPACITOR	270PF, 50V
	C4	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C5	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C7	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C8	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C9	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C10	QEK61CM-106	E CAPACITOR	10μF, 16V
	C11	QEK61CM-106	E CAPACITOR	10μF, 16V
	C12	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C13	QFV71HJ-473	TF CAPACITOR	0.047μF, 50V
	C14	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C15	QCBB1HJ-331	CAPACITOR	330PF, 50V
	C16	QCBB1HJ-821	CAPACITOR	820PF, 50V
	L2	PU59152-270J	COIL	27μH
	SPC1	PU59210-001	W. LOKING SPACER, X2	
	TP1	PU45908-3	TEST PIN, X2, (TP1, GND)	
	CN1	PU55844-102	CAP HOUSING	
	CN2	PU55844-102R	CAP HOUSING	
	CN3	PU59555-106	CAP HOUSING	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

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29. DECODE/VPT BOARD ASSEMBLY 〈87〉

	PWBA	PB10341A-01	DECODE/VPT BOARD ASSEMBLY
	IC1	M52008SP	IC
	IC2	NJM2233BM	IC
	IC3	TC4S66F	IC
	IC4	TC4S66F	IC
	IC5	LM358PS	IC
	IC6	TC4S66F	IC
	IC7	NJM2233BM	IC
	IC8	TL026CPS	IC
	IC9	LM324NS	SOP IC
	IC10	TC4S66F	IC
	IC11	TC4S66F	IC
	IC12	XN4601	TRANSISTOR
	IC13	HA19211BNT	IC
	IC14	LM358PS	IC
	IC15	MC74HC4066F	SOP IC
	IC16	MB40978PFQ-G	IC
	IC17	MC74HC4053F	IC
	IC18	V7040	IC
	IC19	NJM2246M	IC
	IC20	NJM2245M	IC
	IC21	NJM2234M	IC
	IC22	NJM2235M	IC
	IC23	NJM2235M	IC
	IC24	NJM2235M	IC
	IC25	TC7S00F	IC
	IC26	TC7S00F	IC
	IC27	TC7S04F	IC
	IC28	TC4S69F	IC
	IC29	TC4S69F	IC
	IC30	MC74HC74F	IC
	IC31	BA7606F	IC
	IC32	TC7S04F	IC
	IC33	TC7S04F	IC
	IC34	TC7SU04F	IC
	IC35	TDA2501	IC
	IC36	MC74HCU04F	IC
	IC37	CAT93C46P	IC
	IC38	MCU2632	IC
	IC39	UPD750080CU-050	IC
		or UPD75P008CU8050	IC
	IC40	DMA2270	IC
	IC41	UPD41464CF-12	IC
	IC42	AMU2481	IC
	IC43	JCP0010	IC
	IC44	UPD42101G-3	IC
	IC45	AFL87F15000E1	IC
	IC47	AFL87F15000E1	IC
	IC48	AFL87F15000E1	IC
	IC49	LM358PS	IC
	IC50	TC7S08F	IC

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	IC51	NJM2243M	IC
	IC52	MC74HC02AF	IC
	IC53	NJM2235M	IC
	IC54	MC14053BF	SOP IC
	or	TC74HCT04AF	IC
	IC56	NJM78L06UA	IC
	IC59	LM393PS	IC
	IC60	TC7S08F	IC
	IC61	TC7S08F	IC
	IC62	TC4S66F	IC
	IC63	LM358PS	IC
	IC64	LM393PS	IC
	IC65	TC7S32F	IC
	IC501	UPD78213GJ-5BJ	IC
	IC502	HM6264ALFP	IC
	IC503	HM6264ALFP	IC
	or	M5M5165FP	IC
	IC504	SDA5243	IC
	IC505	SDA5231	IC
	IC506	MC74HC74F	IC
	or	TC74HC74AF	IC
	IC508	IC-PST529DMT-X	IC
	IC509	S-8052ANY-NH-X	IC
	or	TC74HC573AF	IC
	IC511	UPD23C512EC-206	IC
	or	UPD27C512C-206	IC
	IC512	MC74HC10F	IC
	or	TC74HC10AF	IC
	IC513	TC7S02F	IC
	Q1	2SC3932(ST)	TRANSISTOR
	Q2	2SA1532(C)	TRANSISTOR
	Q3	2SC3932(ST)	TRANSISTOR
	Q4	2SC3931(CD)	TRANSISTOR
	Q5	2SA1576(QR)	TRANSISTOR
	Q6	2SA1576(QR)	TRANSISTOR
	Q7	2SC4081(QR)	TRANSISTOR
	Q11	2SA1576(QR)	TRANSISTOR
	Q12	2SC4081(QR)	TRANSISTOR
	Q13	2SC4081(QR)	TRANSISTOR
	Q15	2SC4081(QR)	TRANSISTOR
	Q17	2SC4081(QR)	TRANSISTOR
	Q18	2SC4081(QR)	TRANSISTOR
	Q19	2SC4081(QR)	TRANSISTOR
	Q20	2SC4081(QR)	TRANSISTOR
	Q21	2SA1576(QR)	TRANSISTOR
	Q22	2SA1576(QR)	TRANSISTOR
	Q23	2SC4081(QR)	TRANSISTOR
	Q24	2SA1576(QR)	TRANSISTOR
	Q25	2SA1576(QR)	TRANSISTOR
	Q26	2SC4081(QR)	TRANSISTOR
	Q27	2SA1576(QR)	TRANSISTOR
	Q28	2SA1576(QR)	TRANSISTOR
	Q29	2SC4081(QR)	TRANSISTOR
	Q30	2SA1576(QR)	TRANSISTOR

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	Q31	2SA1576(QR)	TRANSISTOR
	Q32	2SA1576(QR)	TRANSISTOR
	Q33	2SA1576(QR)	TRANSISTOR
	Q34	2SA1576(QR)	TRANSISTOR
	Q35	2SK210(GR)	TRANSISTOR
	Q36	DTC124EU	TRANSISTOR
	Q37	DTA124EU	TRANSISTOR
	Q38	DTC124EU	TRANSISTOR
	Q40	2SC4081(QR)	TRANSISTOR
	Q41	2SC4081(QR)	TRANSISTOR
	Q42	2SA1576(QR)	TRANSISTOR
	Q43	2SA1576(QR)	TRANSISTOR
	Q44	2SC4081(QR)	TRANSISTOR
	Q45	2SC4081(QR)	TRANSISTOR
	Q46	2SD1766(QR)	TRANSISTOR
	Q47	2SC4081(QR)	TRANSISTOR
	Q48	2SC4081(QR)	TRANSISTOR
	Q51	2SD1766(QR)	TRANSISTOR
	Q52	2SD1812(PQ)	TRANSISTOR
	Q53	2SB1425(EU)	TRANSISTOR
	Q54	DTC114EU	TRANSISTOR
	Q55	DTC114EU	TRANSISTOR
	Q57	2SD1812(PQ)	TRANSISTOR
	Q58	2SC4081(QR)	TRANSISTOR
	Q59	2SK621	FE TRANSISTOR
	Q60	2SC4081(QR)	TRANSISTOR
	Q61	2SK621	FE TRANSISTOR
	Q62	DTA124EU	TRANSISTOR
	Q63	DTC114EU	TRANSISTOR
	Q64	DTC144EU	TRANSISTOR
	Q65	DTC124EU	TRANSISTOR
	Q66	2SC4081(QR)	TRANSISTOR
	Q67	2SC4081(QR)	TRANSISTOR
	Q68	2SC4081(QR)	TRANSISTOR
	Q69	DTC124EU	TRANSISTOR
	Q70	2SK621	FE TRANSISTOR
	Q71	DTC144EU	TRANSISTOR
	Q72	2SC4081(QR)	TRANSISTOR
	Q73	2SA1576(QR)	TRANSISTOR
	Q74	2SC4081(QR)	TRANSISTOR
	Q75	2SC4081(QR)	TRANSISTOR
	Q76	2SC4081(QR)	TRANSISTOR
	Q77	2SA1576(QR)	TRANSISTOR
	Q502	2SK621	FE TRANSISTOR
	Q503	2SA1576(QR)	TRANSISTOR
	Q505	2SK621	FE TRANSISTOR
	Q506	2SB1010(QR)	TRANSISTOR
	Q507	2SD1292(QR)	TRANSISTOR
	D1	DA204U	DIODE
	D2	DAP202U	DIODE
	D3	DA204U	DIODE
	D4	DA204U	DIODE
	D5	DA204U	DIODE
	D6	1SS99	DIODE
	D7	1SS99	DIODE

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	D8	DA204U	DIODE	
	D9	DA204U	DIODE	
	D10	DAN202U	DIODE	
	D11	DAN202U	DIODE	
	D12	DAP202U	DIODE	
	D14	DAP202U	DIODE	
	D15	MTZ10B	ZENER DIODE	
	D16	DAN202U	DIODE	
	D17	DAN202U	DIODE	
	D18	DAN202U	DIODE	
	D19	DAN202U	DIODE	
	D20	DAN202U	DIODE	
	D21	DAN202U	DIODE	
	D22	MTZ5.6B	ZENER DIODE	
	D23	DAP202U	DIODE	
	D24	DAP202U	DIODE	
	D25	DAN202U	DIODE	
	D26	DAN202U	DIODE	
	D27	DAN202U	DIODE	
	D28	DAN202U	DIODE	
	D29	DAP202U	DIODE	
	D30	DAN202U	DIODE	
	D31	DAN202U	DIODE	
	D32	11E2	DIODE	
	D501	DAP202U	DIODE	
	D502	DAP202U	DIODE	
	D503	DAP202U	DIODE	
	D505	DAN202U	DIODE	
	D506	DAP202U	DIODE	
	D508	RB400D	DIODE	
	D509	DAP202U	DIODE	
	D510	DA204U	DIODE	
	R1	QRSA08J-750YN	RESISTOR	75Ω, 1/10W
	R2	QRSA08J-331YN	RESISTOR	330Ω, 1/10W
	R3	QRSA08J-682YN	RESISTOR	6.8KΩ, 1/10W
	R4	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
	R5	QRS188J-681YN	RESISTOR	680Ω, 1/8W
	R6	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R7	QRSA08J-220YN	RESISTOR	22Ω, 1/10W
	R8	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
	R9	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R10	QRSA08J-272YN	RESISTOR	2.7KΩ, 1/10W
	R11	QRSA08J-221YN	RESISTOR	220Ω, 1/10W
	R12	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R13	QRS188J-471YN	RESISTOR	470Ω, 1/8W
	R14	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R15	QRSA08J-220YN	RESISTOR	22Ω, 1/10W
	R16	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
	R17	QRSA08J-392YN	RESISTOR	3.9KΩ, 1/10W
	R18	QVZ3521-472	V RESISTOR	4.7KΩ
	R19	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
	R20	QRSA08J-824YN	RESISTOR	820KΩ, 1/10W
	R21	QRSA08J-470YN	RESISTOR	47Ω, 1/10W
	R22	QRSA08J-561YN	RESISTOR	560Ω, 1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R23	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R24	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
	R25	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
	R26	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R27	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
	R28	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R29	QRSA08J-473YN	RESISTOR	47KΩ, 1/10W
	R30	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R31	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R32	NVP1304-472N	V RESISTOR	4.7KΩ
	R33	QRSA08J-272YN	RESISTOR	2.7KΩ, 1/10W
	R34	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R35	QRSA08J-224YN	RESISTOR	220KΩ, 1/10W
	R36	QRSA08J-682YN	RESISTOR	6.8KΩ, 1/10W
	R37	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R38	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R39	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R40	QRSA08J-682YN	RESISTOR	6.8KΩ, 1/10W
	R41	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
	R42	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
	R43	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
	R45	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R46	QRSA08J-473YN	RESISTOR	47KΩ, 1/10W
	R47	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R48	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
	R49	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R50	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R51	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R52	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R53	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R54	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R55	NVP1304-472N	V RESISTOR, BASEBAND AGC	4.7KΩ
	R56	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R57	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R58	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
	R59	QRSA08J-124YN	RESISTOR	120KΩ, 1/10W
	R60	QRSA08J-331YN	RESISTOR	330Ω, 1/10W
	R61	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R62	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R63	QRSA08J-334YN	RESISTOR	330KΩ, 1/10W
	R64	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R65	QRSA08J-224YN	RESISTOR	220KΩ, 1/10W
	R66	QRSA08J-123YN	RESISTOR	12KΩ, 1/10W
	R67	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R68	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R69	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R70	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R73	QVZ3521-102	V RESISTOR	1KΩ
	R80	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R81	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
	R82	QRSA08J-332YN	RESISTOR	3.3KΩ, 1/10W
	R83	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R84	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
	R85	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R86	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
	R87	QRSA08J-821YN	RESISTOR	820Ω, 1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R88	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R89	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R90	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R91	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R92	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R93	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R94	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R95	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R96	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R97	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R98	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R99	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R100	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R101	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R102	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R103	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R105	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R111	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
R112	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R114	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R115	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
R116	QRSA08J-153YN	RESISTOR	15KΩ, 1/10W
R117	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R119	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R120	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R121	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R122	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
R123	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
R124	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R125	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
R126	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
R128	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
R129	QRSA08J-153YN	RESISTOR	15KΩ, 1/10W
R130	QRSA08J-822YN	RESISTOR	8.2KΩ, 1/10W
R131	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
R132	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R133	QRSA08J-682	RESISTOR	6.8KΩ, 1/10W
R134	QRSA08J-823YN	RESISTOR	82KΩ, 1/10W
R135	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R136	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R137	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R138	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R139	QRSA08J-272YN	RESISTOR	2.7KΩ, 1/10W
R140	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R141	QRSA08J-151YN	RESISTOR	150Ω, 1/10W
R142	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R143	QRSA08J-823YN	RESISTOR	82KΩ, 1/10W
R144	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R145	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R146	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
R148	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R149	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R150	QRSA08J-151YN	RESISTOR	150Ω, 1/10W
R151	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R152	QRSA08J-823YN	RESISTOR	82KΩ, 1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R153	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R154	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R155	QRSA08J-681YN	RESISTOR	680Ω, 1/10W
R156	QRSA08J-392YN	RESISTOR	3.9KΩ, 1/10W
R157	QRSA08J-332YN	RESISTOR	3.3KΩ, 1/10W
R158	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R159	QRSA08J-151YN	RESISTOR	150Ω, 1/10W
R160	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R161	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
R162	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
R163	QRSA08J-183YN	RESISTOR	18KΩ, 1/10W
R164	NVP1304-153N	V RESISTOR, BURST LEVEL (1)	15KΩ
R165	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R166	NVP1304-153N	V RESISTOR, BURST LEVEL (2)	15KΩ
R167	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R168	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R170	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
R171	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R172	QRSA08J-151YN	RESISTOR	150Ω, 1/10W
R173	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
R174	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R175	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R176	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R177	QRSA08J-750YN	RESISTOR	75Ω, 1/10W
R178	QRSA08J-750YN	RESISTOR	75Ω, 1/10W
R179	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R180	QRSA08J-562YN	RESISTOR	5.6KΩ, 1/10W
R181	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
R182	QRSA08J-100YN	RESISTOR	10Ω, 1/10W
R183	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R184	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R185	QRSA08J-153YN	RESISTOR	15KΩ, 1/10W
R186	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R187	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R188	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R189	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R190	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R191	QRS188J-821YN	RESISTOR	820Ω, 1/8W
R192	QRSA08J-470YN	RESISTOR	47Ω, 1/10W
R193	QRSA08J-470YN	RESISTOR	47Ω, 1/10W
R196	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R198	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
R199	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R200	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
R201	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R202	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
R203	QRSA08J-100YN	RESISTOR	10Ω, 1/10W
R204	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
R205	QRSA08J-331YN	RESISTOR	330Ω, 1/10W
R206	QRSA08J-332YN	RESISTOR	3.3KΩ, 1/10W
R207	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
R208	QRSA08J-273YN	RESISTOR	27KΩ, 1/10W
R209	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
R210	QRSA08J-272YN	RESISTOR	2.7KΩ, 1/10W
R211	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R212	QRSA08J-473YN	RESISTOR	47KΩ, 1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R213	QRSA08J-473YN	RESISTOR	47KΩ, 1/10W
	R214	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R215	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R216	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R223	QRSA08J-752YN	RESISTOR	7.5KΩ, 1/10W
	R224	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
	R225	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R226	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R227	QRSA08J-273YN	RESISTOR	27KΩ, 1/10W
	R228	QRSA08J-392YN	RESISTOR	3.9KΩ, 1/10W
	R229	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R230	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R231	NVP1304-333N	V RESISTOR, COLOR LEVEL	33KΩ
	R232	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R233	QRSA08J-332YN	RESISTOR	3.3KΩ, 1/10W
	R234	QRSA08J-332YN	RESISTOR	3.3KΩ, 1/10W
	R235	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
	R236	QRSA08J-473YN	RESISTOR	47KΩ, 1/10W
	R237	QRSA08J-681YN	RESISTOR	680Ω, 1/10W
	R238	NVP1304-102N	V RESISTOR, SUB CARR ADJ	1KΩ
	R239	QRSA08J-473YN	RESISTOR	47KΩ, 1/10W
	R240	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
	R241	QRSA08J-331YN	RESISTOR	330Ω, 1/10W
	R242	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
	R243	QRSA08J-683YN	RESISTOR	68KΩ, 1/10W
	R244	QRSA08J-683YN	RESISTOR	68KΩ, 1/10W
	R245	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R246	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R247	QRSA08J-562YN	RESISTOR	5.6KΩ, 1/10W
	R248	QRSA08J-562YN	RESISTOR	5.6KΩ, 1/10W
	R249	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R250	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R251	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R252	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R253	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R254	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R255	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
	R256	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
	R257	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R258	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R259	QRSA08J-562YN	RESISTOR	5.6KΩ, 1/10W
	R260	QRSA08J-562YN	RESISTOR	5.6KΩ, 1/10W
	R261	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R262	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R263	QRSA08J-562YN	RESISTOR	5.6KΩ, 1/10W
	R264	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R265	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R266	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R267	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
	R268	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R269	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R270	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R271	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R275	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R276	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
	R277	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R278	NRS125J-151NZ	RESISTOR	150Ω, 1/2W
	R280	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R281	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R283	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R284	QRSA08J-392YN	RESISTOR	3.9KΩ, 1/10W
	R285	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R286	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R287	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R288	QRSA08J-750YN	RESISTOR	75Ω, 1/10W
	R289	QRSA08J-473YN	RESISTOR	47KΩ, 1/10W
	R290	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R291	QRSA08J-750YN	RESISTOR	75Ω, 1/10W
	R292	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R293	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R294	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R295	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R296	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
	R297	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R300	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R301	QRSA08J-822YN	RESISTOR	8.2KΩ, 1/10W
	R302	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R303	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
	R305	QRSA08J-272YN	RESISTOR	2.7KΩ, 1/10W
	R307	QRSA08J-392YN	RESISTOR	3.9KΩ, 1/10W
	R308	QRSA08J-272YN	RESISTOR	2.7KΩ, 1/10W
	R309	QRSA08J-272YN	RESISTOR	2.7KΩ, 1/10W
	R311	QRSA08J-392YN	RESISTOR	3.9KΩ, 1/10W
	R312	QRSA08J-272YN	RESISTOR	2.7KΩ, 1/10W
	R313	QRSA08J-751YN	RESISTOR	750Ω, 1/10W
	R314	QRSA08J-100YN	RESISTOR	10Ω, 1/10W
	R315	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R316	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R318	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R319	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R320	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
	R321	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R322	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
	R323	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R324	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
	R325	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R326	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R327	QRSA08J-682YN	RESISTOR	6.8KΩ, 1/10W
	R328	QRSA08J-0R0YN	RESISTOR	0Ω, 1/10W
	R329	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
	R330	QRSA08J-224YN	RESISTOR	220KΩ, 1/10W
	R331	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R332	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R333	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R334	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R335	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R336	QRSA08J-225YN	RESISTOR	2.2MΩ, 1/10W
	R337	QRSA08J-225YN	RESISTOR	2.2MΩ, 1/10W
	R339	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
	R340	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R341	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R342	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R343	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
R344	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
R345	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R346	QRSA08J-822YN	RESISTOR	8.2KΩ, 1/10W
R348	QRSA08J-473YN	RESISTOR	47KΩ, 1/10W
R351	QRSA08J-183YN	RESISTOR	18KΩ, 1/10W
R352	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
R353	QRSA08J-563YN	RESISTOR	56KΩ, 1/10W
R354	QRSA08J-273YN	RESISTOR	27KΩ, 1/10W
R355	QRSA08J-153YN	RESISTOR	15KΩ, 1/10W
R356	QRSA08J-303YN	RESISTOR	30KΩ, 1/10W
R357	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
R358	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
R359	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R360	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
R361	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R362	QRSA08J-272YN	RESISTOR	2.7KΩ, 1/10W
R363	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R364	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R365	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R366	QRSA08J-0R0YN	RESISTOR	0Ω, 1/10W
R367	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R370	QRSA08J-392YN	RESISTOR	3.9KΩ, 1/10W
R371	QRSA08J-223YN	RESISTOR	22KΩ, 1/10W
R372	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R373	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R374	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R375	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R376	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R382	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
R383	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R384	QRSA08J-474YN	RESISTOR	470KΩ, 1/10W
R385	QRD162J-474	RESISTOR	470KΩ, 1/6W
R501	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R502	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R503	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R504	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R505	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R506	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R507	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R508	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R509	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R510	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R511	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R512	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R513	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R514	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R515	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R516	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R517	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R518	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R519	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R520	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R521	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R522	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R523	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R524	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R525	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
R526	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
R527	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
R528	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R529	QRSA08J-151YN	RESISTOR	150Ω, 1/10W
R530	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
R531	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
R532	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
R533	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
R534	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
R535	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R536	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R537	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R538	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R539	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R540	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R541	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R546	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R547	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R549	QRSA08J-331YN	RESISTOR	330Ω, 1/10W
R550	QRSA08J-683YN	RESISTOR	68KΩ, 1/10W
R552	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
R554	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
R567	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
R568	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
R569	QRSA08J-681YN	RESISTOR	680Ω, 1/10W
R570	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
R574	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
R577	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R578	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R579	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
R580	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
R581	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R582	QRSA08J-682YN	RESISTOR	6.8KΩ, 1/10W
R583	QRSA08J-562YN	RESISTOR	5.6KΩ, 1/10W
R584	QRSA08J-332YN	RESISTOR	3.3KΩ, 1/10W
R585	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R586	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R587	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R588	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R589	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
R590	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
C1	QCTA1CH-3R0	FC CAPACITOR	3PF, 16V
C2	QCTA1CH-3R0	FC CAPACITOR	3PF, 16V
C3	QCYA1HK-102	CAPACITOR	0.001μF, 50V
C4	QETC1CM-336	E CAPACITOR	33μF, 16V
C5	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C6	QCTA1CH-3R0	FC CAPACITOR	3PF, 16V
C7	QCTA1CH-3R0	FC CAPACITOR	3PF, 16V
C8	QCYA1HK-102	CAPACITOR	0.001μF, 50V
C9	QCFA1HZ-103	CAPACITOR	0.01μF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C10	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C11	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C12	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C13	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C14	QETC1CM-336	E CAPACITOR	33μF, 16V
	C15	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C16	PU57601-225MC	E CAPACITOR	2.2μF
	C18	QETC1HM-105	E CAPACITOR	1μF, 50V
	C19	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C20	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C21	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C22	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C23	QETC1CM-336	E CAPACITOR	33μF, 16V
	C25	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C26	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C28	QCTA1CH-220	CAPACITOR	22PF, 16V
	C29	QEPC1CM-106	NP E CAPACITOR	10μF, 16V
	C30	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C31	QETC1HM-225	E CAPACITOR	2.2μF, 50V
	C32	QETC1CM-336	E CAPACITOR	33μF, 16V
	C33	QETC1HM-105	E CAPACITOR	1μF, 50V
	C34	QETC1CM-336	E CAPACITOR	33μF, 16V
	C35	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C36	QCTA1CH-150	CAPACITOR	15PF, 16V
	C37	QCTA1CH-181	CAPACITOR	180PF, 16V
	C38	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C39	QETC1CM-106	E CAPACITOR	10μF, 16V
	C40	QETC1CM-106	E CAPACITOR	10μF, 16V
	C41	QETC1CM-106	E CAPACITOR	10μF, 16V
	C42	QETC1CM-336	E CAPACITOR	33μF, 16V
	C43	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C44	QETC1CM-106	E CAPACITOR	10μF, 16V
	C45	QCTA1CH-120	CAPACITOR	12PF, 16V
	C46	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C47	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C48	QETC1CM-107	E CAPACITOR	100μF, 16V
	C49	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C50	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C51	QFN31HJ-104	M CAPACITOR	0.1μF, 50V
	C52	QETC1CM-226	E CAPACITOR	22μF, 16V
	C53	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C54	QETC1CM-106	E CAPACITOR	10μF, 16V
	C55	QETC1CM-106	E CAPACITOR	10μF, 16V
	C57	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C59	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C60	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C61	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C62	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C63	QCYA1HK-222	CAPACITOR	0.0022μF, 50V
	C64	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C65	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C66	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C67	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C68	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C69	QCFA1HZ-103	CAPACITOR	0.01μF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C71	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C72	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C73	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C74	QETC1CM-476	E CAPACITOR	47μF, 16V
	C75	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C76	QETC1CM-106	E CAPACITOR	10μF, 16V
	C78	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C81	QETC1CM-336	E CAPACITOR	33μF, 16V
	C82	QETC1CM-336	E CAPACITOR	33μF, 16V
	C83	QETC1CM-336	E CAPACITOR	33μF, 16V
	C84	QCTA1CH-5R0	CAPACITOR	5PF, 16V
	C85	QETC1CM-106	E CAPACITOR	10μF, 16V
	C86	QETC1CM-106	E CAPACITOR	10μF, 16V
	C87	QETC1CM-106	E CAPACITOR	10μF, 16V
	C88	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C89	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C90	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C91	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C92	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C93	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C94	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C95	QETC1CM-106	E CAPACITOR	10μF, 16V
	C96	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C97	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C98	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C99	QETC0JM-108	E CAPACITOR	1000μF, 6.3V
	C100	QETC0JM-108	E CAPACITOR	1000μF, 6.3V
	C101	QETC1CM-106	E CAPACITOR	10μF, 16V
	C102	QETC1CM-106	E CAPACITOR	10μF, 16V
	C103	QETC1CM-106	E CAPACITOR	10μF, 16V
	C104	QETC1CM-106	E CAPACITOR	10μF, 16V
	C105	QCFA1CZ-474	CAPACITOR	0.47μF, 16V
	C106	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C107	QETC1CM-106	E CAPACITOR	10μF, 16V
	C108	QETC1CM-106	E CAPACITOR	10μF, 16V
	C109	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C110	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C112	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C113	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C114	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C117	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C118	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C119	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C120	QETC1CM-106	E CAPACITOR	10μF, 16V
	C121	QETC1CM-106	E CAPACITOR	10μF, 16V
	C122	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C123	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C126	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C127	QETC1CM-106	E CAPACITOR	10μF, 16V
	C128	QETC1CM-106	E CAPACITOR	10μF, 16V
	C129	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C130	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C131	QETC1CM-106	E CAPACITOR	10μF, 16V
	C132	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C133	QETC1CM-106	E CAPACITOR	10μF, 16V
	C134	QCTA1CH-471	CAPACITOR	470PF, 16V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C135	QCTA1CH-471	CAPACITOR	470PF, 16V
C136	QETC1CM-106	E CAPACITOR	10μF, 16V
C137	QETC1CM-106	E CAPACITOR	10μF, 16V
C138	QETC1CM-106	E CAPACITOR	10μF, 16V
C139	QETC1CM-106	E CAPACITOR	10μF, 16V
C140	QETC1CM-106	E CAPACITOR	10μF, 16V
C141	QETC1CM-476	E CAPACITOR	47μF, 16V
C142	QETC1CM-106	E CAPACITOR	10μF, 16V
C143	QETC1CM-476	E CAPACITOR	47μF, 16V
C144	QETC1CM-227	E CAPACITOR	220μF, 16V
C145	QETC1CM-227	E CAPACITOR	220μF, 16V
C146	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C148	QCTA1CH-471	CAPACITOR	470PF, 16V
C149	QETC1CM-106	E CAPACITOR	10μF, 16V
C150	QETC1CM-106	E CAPACITOR	10μF, 16V
C151	QETC1CM-227	E CAPACITOR	220μF, 16V
C156	QETC1CM-336	E CAPACITOR	33μF, 16V
C157	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C158	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C159	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C160	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C161	QETC1HM-104	E CAPACITOR	0.1μF, 50V
C162	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C163	QCTA1CH-220	CAPACITOR	22PF, 16V
C165	QCFA1HZ-104	CAPACITOR	0.1μF, 50V
C166	QCTA1CH-220	CAPACITOR	22PF, 16V
C167	QAT3123-300	TRIM CAP, FSC ADJ	
C168	QCTA1CH-220	CAPACITOR	22PF, 16V
C169	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C170	QCTA1CH-330	CAPACITOR	33PF, 16V
C171	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C173	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C174	QCFA1CZ-474	CAPACITOR	0.47μF, 16V
C175	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C176	QCFA1HZ-104	CAPACITOR	0.1μF, 50V
C177	QETC0JM-107	E CAPACITOR	100μF, 6.3V
C178	QCYA1HK-103	CAPACITOR	0.01μF, 50V
C179	QETC0JM-107	E CAPACITOR	100μF, 6.3V
C180	QCFA1CZ-474	CAPACITOR	0.47μF, 16V
C181	QCFA1HZ-104	CAPACITOR	0.1μF, 50V
C182	QCFA1CZ-474	CAPACITOR	0.47μF, 16V
C183	QCTA1CH-330	CAPACITOR	33PF, 16V
C184	QETC1CM-106	E CAPACITOR	10μF, 16V
C185	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C186	QETC1CM-106	E CAPACITOR	10μF, 16V
C188	QETC1HM-104	E CAPACITOR	0.1μF, 50V
C190	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C193	QETC1CM-106	E CAPACITOR	10μF, 16V
C194	QETC1CM-106	E CAPACITOR	10μF, 16V
C195	QETC1CM-106	E CAPACITOR	10μF, 16V
C196	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C197	QCTA1CH-101	CAPACITOR	100PF, 16V
C201	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C202	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C203	QCFA1HZ-103	CAPACITOR	0.01μF, 50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C204	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C205	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C206	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C207	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C208	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C209	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C210	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C212	QETC0JM-476	E CAPACITOR	47μF, 6.3V
C213	QETC0JM-476	E CAPACITOR	47μF, 6.3V
C214	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C215	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C216	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C218	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C219	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C220	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C221	QCTA1CH-330	CAPACITOR	33PF, 16V
C222	QETC0JM-476	E CAPACITOR	47μF, 6.3V
C223	QETC0JM-476	E CAPACITOR	47μF, 6.3V
C225	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C226	QCTA1CH-470	CAPACITOR	47PF, 16V
C227	QCTA1CH-820	CAPACITOR	82PF, 16V
C228	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C229	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C230	QCTA1CH-330	CAPACITOR	33PF, 16V
C231	QETC1CM-107	E CAPACITOR	100μF, 16V
C235	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C236	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C238	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C240	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C241	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C242	QCTA1CH-5R0	CAPACITOR	5PF, 16V
C243	QCTA1CH-3R0	CAPACITOR	3PF, 16V
C244	QCTA1CH-3R0	CAPACITOR	3PF, 16V
C245	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C246	QETC1AM-107	E CAPACITOR	100μF, 10V
C328	QETC1CM-106	E CAPACITOR	10μF, 16V
C329	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C330	QETC0JM-107	E CAPACITOR	100μF, 6.3V
C331	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C332	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C333	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C334	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C335	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C336	QCFA1HZ-104	CAPACITOR	0.1μF, 50V
C337	QETC1CM-106	E CAPACITOR	10μF, 16V
C338	QETC1CM-107	E CAPACITOR	100μF, 16V
C339	QETC1CM-106	E CAPACITOR	10μF, 16V
C340	QETC1CM-106	E CAPACITOR	10μF, 16V
C343	QETC1CM-106	E CAPACITOR	10μF, 16V
C501	QEA40HZ-104	E CAPACITOR (DOUBLE)	0.1μF, 5.5V
C502	QETC1CM-106	E CAPACITOR	10μF, 16V
C503	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C504	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
C506	QCFA1HZ-104	CAPACITOR	0.1μF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C507	QCFA1HZ-104	CAPACITOR	0.1μF, 50V
	C509	QETC1CM-106	E CAPACITOR	10μF, 16V
	C510	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C511	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C513	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C515	QETC1HM-225	E CAPACITOR	2.2μF, 50V
	C516	QCFA1EZ-683	CAPACITOR	0.068μF, 25V
	C517	QCSA1HJ-221	CAPACITOR	220PF, 50V
	C518	QCFA1EZ-473	CAPACITOR	0.047μF, 25V
	C520	QCTA1CH-180	CAPACITOR	18PF, 16V
	C521	QCFA1EZ-473	CAPACITOR	0.047μF, 25V
	C524	QAT3120-200	TRIMMER CAPACITOR, VCO.	
	C525	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C526	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C527	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C528	QETC1CM-336	E CAPACITOR	33μF, 16V
	C529	QCTA1CH-150	CAPACITOR	15PF, 16V
	C530	QCSA1HJ-102	CAPACITOR	0.001μF, 50V
	C531	QCSA1HJ-471	CAPACITOR	470PF, 50V
	C532	QCFA1HZ-223	CAPACITOR	0.022μF, 50V
	C533	QCTA1CH-271	CAPACITOR	270PF, 16V
	C534	QCTA1CH-101	CAPACITOR	100PF, 16V
	C535	QCTA1CH-120	CAPACITOR	12PF, 16V
	C536	QCTA1CH-270	CAPACITOR	27PF, 16V
	C546	QETC1CM-336	E CAPACITOR	33μF, 16V
	C547	QETC1CM-226	E CAPACITOR	22μF, 16V
	C548	QETC1CM-226	E CAPACITOR	22μF, 16V
	L1	PELN0297	IF.TRANSFORMER	
	L2	PELN0298	IF.TRANSFORMER	
	L3	PU60025-1R3	COIL	1.3μH
	L4	PU54223-1R0J	COIL	1.0μH
	L5	PU54223-1R0J	COIL	1.0μH
	L7	PU60497-3	IF.TRANSFORMER	
	L8	PU54223-1R0J	COIL	1.0μH
	L9	PU54223-100J	COIL	10μH
	L10	PU54223-100J	COIL	10μH
	L11	PU54223-100J	COIL	10μH
	L12	PU54223-100J	COIL	10μH
	L14	PU54223-100J	COIL	10μH
	L18	PU54223-100J	COIL	10μH
	L19	PU54223-100J	COIL	10μH
	L21	PU54223-100J	COIL	10μH
	L22	PU54223-100J	COIL	10μH
	L23	PU54223-100J	COIL	10μH
	L24	PU60281-2	FERRITE BEADS	
	L25	PU54223-100J	COIL	10μH
	L27	PU54223-100J	COIL	10μH
	L30	PU54223-100J	COIL	10μH
	L31	PU54223-100J	COIL	10μH
	L32	PU54223-100J	COIL	10μH
	L33	PU54223-100J	COIL	10μH
	L34	PU54223-100J	COIL	10μH
	L501	PU54223-150J	COIL	15μH

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	L502	PU54223-100J	COIL	10μH
	L503	PU54223-150J	COIL	15μH
	EQ1	PELN0287	EQUALIZER	
	LPF1	PELN0282	LOW PASS FILTER	
	LPF2	PELN0283	LOW PASS FILTER	
	LPF3	PELN0284	LOW PASS FILTER	
	LPF4	PELN0284	LOW PASS FILTER	
	LPF5	PELN0285	LOW PASS FILTER	
	BPF1	PELN0286	BAND PASS FILTER	
⚠	CF1	PU59545	RESONATOR	
	DL1	PELN0288	DELAY LINE	
	DL2	PU60600	DELAY LINE	
	LC4	PU61083-223	NOISE FILTER	
	LC5	PU61083-223	NOISE FILTER	
	LC6	PU61083-223	NOISE FILTER	
	LC7	PU61083-223	NOISE FILTER	
	LC8	PU61083-223	NOISE FILTER	
	SAW1	PEVB0333	SAW FILTER	
⚠	CF501	PU60414	CERAMIC FILTER	
⚠	X1	PEVB0331	CRYSTAL RESONATOR	
⚠	X2	PEVB0332	CRYSTAL RESONATOR	
⚠	X3	PU31449-4K	CRYSTAL RESONATOR	
⚠	X501	PU60827	CRYSTAL RESONATOR	
⚠	X502	PU60828	CRYSTAL RESONATOR	
	SW1	PU59873	SLIDE SWITCH	
	CL1	PU59311-4	WIRE CLAMP	
	JA1	PQ20949-1-1	JACK BOARD	
	J2	QMC0131-002	PIN JACK	
	SCW1	SDSF2608Z	SCREW, X2	
	WR1	PW30402-AB17M	COAXIAL CABLE	
	CN1	PU58844-4	CAP HOUSING	
	CN2	PU58844-4	CAP HOUSING	
	CN3	PU58844-6	CAP HOUSING	
	CN4	PU58844-7	CAP HOUSING	
	CN5	PU58844-6	CAP HOUSING	
	CN6	PU59555-9	CAP HOUSING	
	CN7	PU58844-3	CAP HOUSING	
	CN8	PU58844-2	CAP HOUSING	
	CN9	PU58844-6	CAP HOUSING	
	CN10	PU58844-7	CAP HOUSING	
	CN11	PU58844-5	CAP HOUSING	
	CN12	PU58844-3	CAP HOUSING	
⚠	CP501	ICP-F10	CIRCUIT PROTECTOR	

SECTION 6
TECHNICAL INFORMATIONS

6.1 MECHANISM CONTROL CPU PIN FUNCTIONS

6.1.1 IC1 pin function

Pin No.	Symboi		I/O format	Label	IN/OUT	Contents
1	Vcc		–	Vcc	IN	for the System Control
2	VREF		–	VREF	IN	for D-A/A-D converter
3	DA		Analog	DA	OUT	REEL MOTOR DRIVE
4	PWM		PWM	PWM	OUT	REEL MOTOR DRIVE (SUB)
5	Port 6	4	N-ch OPEN DRAIN	FF	OUT	
6		3		REC START		NORMAL : (High), REC mode : (Low)
7		2		POWER ON/OFF		POWER ON : (Low), POWER OFF : (High)
8		1		EE		EE/REC : (Low), PB : (High)
9		0		SP		SP mode : (Low), LP mode : (High)
10	AN	7	Analog	OPERATION SW-1	IN	
11		6		OPERATION SW-2		
12		5		OPERATION SW-3		
13		4		EXP DATA	OUT	16 bit Serial data to EXPAND IC Refer to 3,1,4-5.
14	Port 4	3	N-ch OPEN DRAIN	AVG FM	IN	AVERAGE FM (∿∿∿)
15		2		DET V		S-VHS/VHS PB detection, VHS : (Low), S-VHS (High)
16		1		SECAM		SECAM detection; SECAM : (Low)
17		0		S MODE	OUT	VHS : (Low), S-VHS (High)
18	Port 3	7	N-ch OPEN DRAIN	VP ON	OUT	V. PULSE ON (H)
19		6		LP SPECIAL		LP mode only, PB : (High), X2/SEARCH FF/SEARCH REW : (Low)
20		5		AT LED		NORMAL : (High), AUTO TRACKING : (Low)
21		4		SLOW/STILL		NORMAL : (High), SLOW/STILL : (Low)
22		3		SLOW PULSE		NORMAL : (High), SLOW : ⊓⊓⊓⊓, F ADV : ⊓⊔
23		2		CAPSTAN FG	IN	SP/LP/EP detection, BACK-SPACE COUNT.
24		1		SRL DATA	OUT	16 bit Serial data to SERVO circuit.
25		0		SRL CLOCK	OUT	
26	INT-1		–	REMOTE	IN	16-bit Serial Data (A/B code)
27	CN Vss			GND	IN	GND
28	RESET			RESET	IN	AC IN RESET
29	X IN			⊓CLOCK	IN	Main System clock (6 MHz)
30	X OUT				OUT	
31	ϕ			NC	–	NC
32	Vss			GND	IN	GND
33	Port 5	7	with Input Latch	CTL PULSE	IN	SP/LP detection
34		6		DRUM FF		DRUM rotation timing
35		5		SUPPLY REEL FG		REEL rotation detect
36		4		TAKE-UP REEL FG		
37		3	High Impedance	CASSETTE SENSOR		CASSETTE HOUSING detection.
38		2		REMOTE PAUSE		REMOTE PAUSE Input: PAUSE ON: (Low), PAUSE OFF : (High)
39		1		MODE SENS-1		MECHANISM mode detection.
40		0		MODE SENS-2		
41	Port 1	7	N-ch OPEN DRAIN	REC SAFETY SW	IN	REC SAFETY SW
42		6		START SENS.		START SENSOR
43		5		END SENS.		END SENSOR
44		4		S CASSETTE SW	IN	S CASSETTE detection, S-TAPE : (Low), NORMAL TAPE : (High)
45		3		REEL (–)	OUT	REEL MOTOR REVERSE (High) : IN2 ④
46		2		REEL (+)		REEL MOTOR FOWARD (High) : IN1 ⑤
47		1		CAP (–)	OUT	CAPSTAN MOTOR REVERSE (High) : IN ⑤
48		0		CAP (+)		CAPSTAN MOTOR FOWARD (High) : IN2 ⑥
49	Port 0	7	N-ch OPEN DRAIN	INDEX	IN/OUT	NORMAL : (Low), INDEX : (High)
50		6		CTL ERASE	OUT	NORMAL : (Low), ERASE : (High)
51		5		SERVO	OUT	NORMAL : (Low), CAPSTAN DRIVE : (High)
52		4		D.O. CTL	IN	D.O. CTL ON : (Low), FMA DET (H)
53		3		N MODE	OUT	REC, EE : (Low). PB (High)
54		2		MUTE	OUT	MUTE : (Low)
55		1		HIFi REC START	OUT	REC START : (Low), NORMAL : (High)
56		0		FE CTL	OUT	FLYING ERASE HEAD CTL, ERASE ON : (Low)
57	Port 2	7	C MOS	L.C. MOTOR CTL-3	OUT	IN3 ③
58		6		L.C. MOTOR CTL-2		IN2 ②
59		5		L.C. MOTOR CTL-1		IN1 ①
60		4		STROBE	IN	4 bit TM bus
61		3		DATA 3	IN/OUT	
62		2		DATA 2		
63		1		DATA 1		
64		0		DATA 0		

6.2 TIMER/DISPLAY CONTROL CIRCUIT

6.2.1 Timer CPU pin functions (IC1)

Pin No.	Symbol	Label	IN/OUT	Contents
1	S3	KS D	OUT	KEY SCAN PULSE OUTPUT
2	S2	" C		
3	S1	" B		
4	S0	" A		
5	P00	POWER DOWN (H)	IN	POWER DOWN DET
6	P01	DSP SERIAL CLOCK	OUT	
7	P02	DSP SERIAL DATA		
8	P03	TEST (L)	IN	CLOCK ADJUSTMENT
9	P10	REMOTE	IN	16-bit serial
10	P11	VPS DAVN	IN	VPS DATA DET (E, EG only)
11	P12	BUSY	IN	
12	P13	CNT PULSE	IN	CTL PULSE (REAL TIME COUNTER)
13	P20	MECHACON DATA 0	IN/OUT	T-M BUS
14	P21	" 1		
15	P22	" 2		
16	P23	" 3		
17	P30	DSP CE (L)	OUT	DISPLAY SERIAL DATA CHIP ENABLE
18	P31	SERIAL DATA	IN/OUT	8-bit VPS SERIAL DATA between Timer CPU and VPS decoder
19	P32	SERIAL CLOCK	OUT	
20	P33	DSP OFF	OUT	NC
21	P60	TUNER DATA 0	IN/OUT	T-T BUS
22	P61	" 1		
23	P62	" 2		
24	P63	" 3		
25	P40	KS 0	IN	KEY SCAN DATA INPUT
26	P41	" 1		
27	P42	" 2		
28	P43	" 3		
29	PP0	FMA CTL	OUT	AUX : (Low), TUNER : (High)
30	X1	SYSTEM CLOCK	IN	4.19 MHz
31	X2			
32	Vss	GND		
33	XT1	GND		
34	XT2	—		
35	P50	AUX (L)	OUT	AUX: (Low), TUNER : (High)
36	P51	TUNER STROBE	OUT	
37	P52	MECHACON STROBE	OUT	
38	P53	TEXT	OUT	TUNER : (Low), TEX : (High) (E, EG only)
39	RESET	RESET (L)	IN	
40	T0	—	—	—
41	T1			
42	T2			
43	T3			
44	T4			
45	T5			
46	T6			
47	T7			
48	T8			
49	T9			
50	T10/PH3	RESET OUT	OUT	TUNER RESET : (High)
51	T11/PH2	—	—	—
52	T12/PH1	NICAM CTL	OUT	(EK only)
53	T13/PH0	SIMUL (L)	OUT	INPUT SELECT CTL SIMUL CASTIN : (Low)
54	T14/S11	KSL	OUT	KEY SCAN PULSE OUTPUT
55	T15/S10	KSK		
56	VLOAD	GND	IN	S0–S9 GND
57	VPRE	GND		
58	S9	KS J	OUT	KEY SCAN PULSE OUTPUT
59	S8	" I		
60	S7	" H		
61	S6	" G		
62	S5	" F		
63	S4	" E		
64	VDD	5 V	IN	

6.3 TUNER CONTROL CIRCUIT

6.3.1 Tuner CPU pin functions

Pin No.	Symbol	Label	IN/OUT	Contents
1	XT1	GND	IN	
2	XT2	NC	–	
3	RESET	RESET (L)	IN	SYSTEM POWER ON RESET
4	X1	4.19 MHz	IN	SYSTEM CLOCK
5	X2	4.19 MHz	–	
6	P33	ENABLE	OUT	
7	P32	CLOCK	OUT	
8	P31	DATA	OUT	
9	P30	A. MUTE (H)	OUT	CH CHANGE or NO SYNC (H)
10	P81	NC	–	
11	P80	NC	–	
12	P03	GND	–	
13	P02	GND	–	
14	P01	GND	–	
15	P00	STROBE	IN	
16	P11	NC	–	
17	P12	SYNC DET (L)	IN	
18	P11	MAC DET (H)	IN	
19	P10	GND	–	
20	NC	UNSW 5 V	–	
21	VDD	UNSW 5 V	IN	
22	P23	MAC ON (H)	OUT	Cd CHANNEL (H)
23	P22	MAC A. MUTE (L)	OUT	CH CHANGE with Cd CHANNEL (L)
24	P21	AGC DEFEAT (H)	OUT	CH CHANGE (H)
25	P20	TUNER ON (H)	OUT	
26	P73	NC	–	
27	P72	MEMORY S. DATA	OUT	
28	P71	MEMORY S. CLOCK	OUT	
29	P70	MEMORY CS	OUT	
30	P63	MEMORY S. DATA	IN	
31	P62	NC	–	
32	P61	P. MUTE (H)	OUT	
33	P60	A. MUTE LONG (H)	OUT	
34	P53	NC	–	
35	P52	NC	–	
36	P51	NC	–	
37	P50	BUSY (L)	OUT	
38	P43	T/T BUS DATA 3	IN/OUT	
39	P42	T/T BUS DATA 2	IN/OUT	
40	P41	T/T BUS DATA 1	IN/OUT	
41	P40	T/T BUS DATA 0	IN/OUT	
42	Vss	GND	IN	